PRELIMINARY AND UNOFFICIAL

AN EASTWEST / QUANTUM LEAP PRODUCTION

Symphonic Orchestra

THE COMPLETE GUIDE

PRELIMINARY AND UNOFFICIAL

Welcome

The EASTWEST / QUANTUM LEAP SYMPHONIC ORCHESTRA sample library is the result of nearly two years of planning, scoring, recording, editing, and programming by over 100 creative professionals. Our goal was to create a full orchestral sample library—that could be reproduced in surround sound—recorded where orchestras sound their most natural, in a “state of the art” concert hall.

First, we had to find the right team to execute the plan. A lot of brainstorming went into this process until the right blend of talent became clear. To capture the sounds, we needed someone with an impressive history of recording orchestras live. The answer was Prof. Keith O. Johnson. His 90-plus recordings have long been considered the standard for high fidelity, and include two GRAMMY award-winners and eight additional GRAMMY nominations. All of the recording equipment used in the project was either hand-built or extensively modified by him to optimize fidelity.

Next, we had to find the right concert hall in which to record EWQLSO. Fortunately, his experience was invaluable here as well. He had recorded in most of the “critically acclaimed” concert halls throughout the world, and had a short list of favorites. It’s extremely difficult to book a popular concert hall for weeks at a time, but we managed to do it during the resident orchestra’s summer break. Needless to say, the orchestra never got a summer break, because they were working on this project.

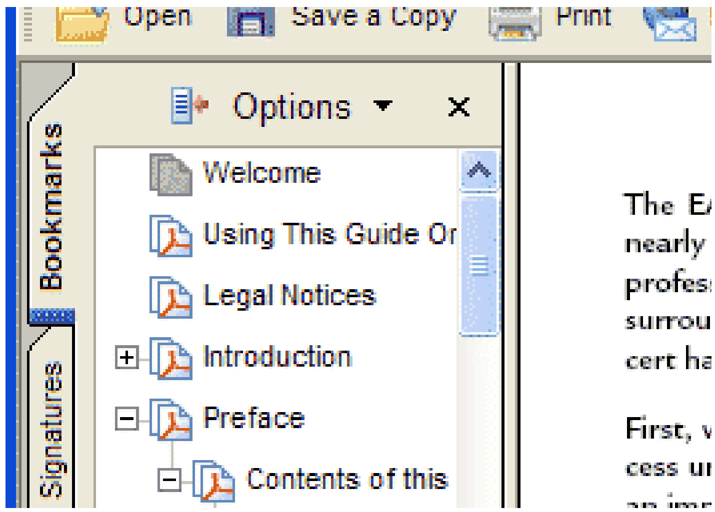
After the recording was completed, the post-production team was put to work, which included some of the finest sound designers and programmers in the business. Special software was developed to edit the multiple tracks simultaneously, and keep them in phase. Nearly a year of post-production was necessary to achieve the final result—a result we are all extremely proud of.

We hope you enjoy EWQLSO as much as we do—and we would love to hear what you create with it. Explore the many sections of this Guide, using it to spark the endless creative possibilities of this ground-breaking sample library!

— Producers DOUG ROGERS and NICK PHOENIX

Using This Guide On-Screen

There are many different sections to this EWQLSO Guide. When reading it on a computer screen with Acrobat Reader, find what you're looking for by opening the Bookmarks pane at the left of your Adobe Acrobat Reader. Use the listing of sections like a Table of Contents that remains open while you explore. Click on an item in the list to jump directly to that section.



You can collapse the subheadings of any section by clicking on the box with the minus sign, and then reopen the section by clicking on the plus sign that will take its place.

Some of the screen shots contain very small type because the Kompakt UI uses such small letters. If you have trouble reading the text on the screen, try zooming in or out to different levels. Sometimes a smaller size give clearer text because of the screen's anti-aliasing. For example, on some screens and for some screen snaps, 75% is clearer—surprisingly—than 100%.

Legal Notices

Disclaimer: This document is *not* a production of East West Sounds, Inc., nor does it necessarily represent the views of that company. This is a work in progress, delivered only as a pre-publication courtesy to those who choose to see an early draft of the Guide. Parts of this document may someday be incorporated in an Official Guide, but this is not yet a finished work.

Readers are advised that there may be errors in this draft that might be corrected in the official version, when and if it released. My posting a link to this document on the NorthernSounds.com's EastWest forum does not constitute an endorsement of anything in this document by East West Sounds or any other entity. Nor does that link represent a commitment by anyone to create an actual Official Guide from this material.

The two signed sections, "Welcome" and "Notes on the Recordings," in this Introduction are copied from the printed *Operation Manual*. Everything else is preliminary.

Note that Chapter 1 is intentionally missing.

— Author and Editor JOHN PHILPIT

INTRODUCTION

Profiles & Notes on the Recordings

Doug Rogers has over 25 years experience in the audio industry, and is the recipient of many recording industry awards including "recording engineer of the year." In 1988 he founded EASTWEST, the most critically acclaimed sound developer in the world, having achieved more Keyboard Magazine KEY BUY AWARDS, Sound On Sound 5 STAR AWARDS, and Future Music PLATINUM AWARDS than any other sound developer. His uncompromising approach to quality, and his innovative ideas have enabled his company to lead the soundware business for 15 years. In the late eighties, he released the very first commercial drum sample CD, and followed it with the multi-award winning title "Bob Clearmountain Drum Samples." His last two productions, BT's "Breakz from the Nu Skool" and "Twisted Textures," both received KEY BUY and 5 STAR AWARDS. He persuaded audio legend Prof. Keith O. Johnson to record EWQLSO, and came up with the revolutionary idea of recording all of the instruments with three simultaneous stereo mic setups so users could control the tone of the instruments, the acoustics of the hall, and create surround sound mixes.

Nick Phoenix is a Los Angeles based composer. He founded Quantum Leap Productions in 1997 to fulfill his needs as a working composer. Surprisingly, this is quite unique in the sound design business. He has produced all of Quantum Leap's AWARD-WINNING sound libraries (QL Guitar & Bass, QL Brass, QL Rare Instruments, QL Voices of the Apocalypse, QL 56 Stratocaster, QL Hardcore Bass, QL Stormdrum, and QL Stormbreakz) with the exception of EWQLSO, which he produced with Doug Rogers. His composing credits include television series for Fox, NBC, Disney, and the History Channel. He is also responsible for music in over 300 film trailers. Some recent examples are: Matrix Reloaded, Minority Report, Spiderman, Tomb Raider 2, Austin Powers 3, Terminator 3, Lord of the Rings Return of the King, Harry Potter 2, Daredevil, Bruce Almighty, The Hulk, Star Wars Episode 2, Monsters Ball, and Chicago. His composition skills, real world experience produc-

ing top soundtracks for film and television, technical ability, innovative programming ideas, and energy, proved to be an invaluable contribution to EWQLSO.

Prof. Keith O. Johnson has spent over 30 years developing a reputation for innovative thinking, technical achievement and musicianship which has elevated him to a position in the audio industry occupied by only a handful of visionaries. His intensive investigation of electronic behavior and acoustic perception have led most recently to his development (with digital engineer Michael Pflaumer) of the revolutionary High Definition Compatible Digital encoding process, produced and marketed by Pacific Microsonics (recently acquired by Microsoft). HDCD is widely considered to be the most accurate recording process ever invented. His 90-plus recordings have long been considered the standard for high fidelity, and include two GRAMMY award-winners and eight additional GRAMMY nominations.

SOME REVIEWS OF HIS RECORDINGS: “How Johnson got that huge climax at the end of the Dances cleanly onto tape transcends engineering and goes into the realm of magic.” -- Harry Pearson, THE ABSOLUTE SOUND. “Keith Johnson’s engineering, mastering and production have, in this case, produced the finest orchestral recording I have ever heard..” -- Russell Lichter, SOUNDSTAGE

Notes on the Recordings

The full EWQLSO sample library, delivered in the Platinum version, can produce full multichannel sound like that from a good recording session in a concert hall. The user can manipulate multichannel files within each sample to move an instrument, create full diffused or highly focused sound, as well as off stage effects that have the same acoustic character as having microphones on stage and mixing them.

Each instrument sample contains high-resolution components recorded in a good concert hall from microphone groups placed to achieve close, full, and ambient sound. Setups are modeled after traditional Decca setups having front omni-directional microphones for full string sound, a directional center tree to focus woodwinds and brass, and a number of stereo pair accents for solo and close up work. Instruments are placed on stage as they would perform, so that signals from these microphone groups can be mixed and have the general technical feel and acoustic properties of a live session. Soloists can be brought forward, other instruments can be accented yet remain back or in the orchestra, off stage effects can be produced, all with correct acoustic perspective.

Much post-production work and active DSP is mandatory to align the multiple time-phase paths from each of the sample groups. In addition, a large concert space was required to avoid claustrophobic wall sounds and to capture the instrument sound we hear at an appropriate distance. These ultimately achieve overall mix clarity.

To provide process headroom for this work, a super resolution recording chain was used. FM microphone responses extended to at least 26 kHz, all signal paths had minimal discrete circuit electronics, and conversions and files were at least 24 bit 88.2kHz. (We also recorded everything at 176.4kHz for future updates.) Hence the GigaBytes of data needed to access the sounds of instruments from different angles, placements and distances. The six channel high-resolution files containing close, full and reverberant feeds can produce a real 3-D orchestral sense like that from a good recording. To do this, simplified user commands or pre-settable instrument placements replace outmoded pan and gain controls functions. The new controls make complex adjustment of direct to reflected sound, time phase relationships, and equalizations to track an instrument placement. In this manner, an instrument can be accented within a group, brought forward as a soloist, or moved off stage and the acoustic sound will correlate.

Instrument Sound

Sonic perspective, close or distant sound experience, has been important during the evolution of musical instruments. Craftspeople develop their sound in the close environs of their shop or studio, but composers and listeners perceive and expect instruments to work properly in an acoustic space. Both aspects must be sampled and reproduced correctly because a listener can focus or hone in on a direct sound from one instrument when placed among others. Feedback mechanisms involved with human hearing subordinate the other sounds so they are perceived as diffused or as an ensemble. When we can see an instrument, this sensitizing feedback, or "cocktail party hearing acuity" is quick and effective. It works for a live concert experience but not for a recording made from the "best seat in the house." Without visual connection, a microphone placed there will capture a diffuse "whole" sound. One can have exact speaker placements in a symmetrical room and meditate on the experience to focus in, but generally some form of spoon-feeding is required.

Recording Practice

A good recording setup often requires a close mic accent pickup to jump-start this focused perception. Once used, the accent is often removed, as only a few of these spots are effective at any one time. Sometimes, a reverberation pickup is added or increased to restore a correct sense of hall response to instrument power. Generally, a good recording setup for an orchestra has accent capability and will be much like early big sound Decca setups: Omni or non-directional pickups at front, a center tree often of directional microphones, several close-placed accents, and a hall sound microphone group. A lush string section sound is created from omni pickups, center tight focus on woodwinds from the tree and a big perspective from riding accent and reverb pickups. Combinations of phase interferences, sonic bleeds to microphones, time arrivals and special energy convey a "best seat" perceptual experience even though the microphones are much closer to the musicians than is the listener in the hall. The sense of instrument directionality and its effect on stage and hall sound is evident.

Post Production

The EWQLSO samples originate from this Decca-type setup and the user can manipulate or mix file perspectives to work a composing project with the same mix capability as would be used in most soundstage and classical recordings. Microphone pickups are selectable, allowing one to mix and create a complex full sounding performance. External equalization adjustments can allow soloists to play very soft, yet have pinpoint resolution in a lush full ensemble. Off-stage musicians can sound diffuse and merge into 5-channel surrounds without creating distraction. Stereo Accents with time-phase control can extend near-field images beyond the speakers, a useful effect for computers and gaming.

Three Dimensional Samples

Three file groups operate in tandem for each instrument or sample. They provide a full sound stage pickup; close, focused sound; and a hall response. All three pickup signals are synchronized to the instrument position for correct time/phase arrival as well as pre-equalized so they will fit into a traditional large-scale mix. In this manner, other preset synchronization and mix variations can be made to create sound for up front solo, stage solo, ensemble blend, chorus, as well as other placements. Such automatic options are not only convenient but they also perform very well. Plus, they reduce processing requirements to help allocate computer resources to create the complex real sound of a good recording.

One Dimensional Samples

Note that a one-dimensional sample, even with extensive electronic support, won't create the varying spatial energy relationships that occur when musicians play different notes. The sounds from behind a trumpet are different from those in front, and their effect in a good concert hall is quite audible and is much a part of the whole listening experience. The real instrument sound has both perceptions, and they change when the instrument is moved. Small room and anechoic samples reveal this effect as a serious problem. Sound radiation from instruments is very complex, and its effect on direct as well as environmental sound perception is important. Consequently, the EWQLSO sample library was made in a big space, and has multiple sample paths.

PROF. KEITH O. JOHNSON

Credits

Intentionally blank until "official."

PREFACE

Contents of this Guide

The rest of this Guide to the *EastWest / Quantum Leap Symphonic Orchestra* comprises eight chapters that explain and document the various aspects of the product, plus Appendices that list the control codes from the MIDI interface and give a sneak peak at the upcoming "Pro" versions.

Here's an outline of the Guide:

The remainder of this Preface explains the tables and diagrams that provide much of the detailed information in this Guide.

About Articulation Tables

List of articulations appear in two separate sections. Chapter 4 lists all articulations by instrument. Here's how the articulations for the solo *Trombone* appear:

Tenor and Bass Trombone		
Low octave sforzando (bass trombone)	STB bass SFZ CREC	P G S
Keyswitch C0–D0	STB KeySwitch C0-D0	P G S
Fast Staccato	STB Stac Fast	P G S
Staccato	STB Stac	P G S
Sustain, MW → attack accent	STB Sus Accent Mod	P G S
Sustain, DXF of attack accent	STB Sus DXF ACC	P G S
Sustain, DFX	STB Sus DXF	P G S
Sustain	STB Sus	P G S
Silver Master Keyswitch	STB Master KS	P G S
Silver Legato Pedal Keyswitch	STB Sus DXF Leg pdl KS	P G S

In Chapter 5, you'll find a list of articulations by type. You might, for example, want to have everyone playing a whole-step trill and want to know which instruments include this articulation. Note that a particular articulation may appear in both its own instrument and within a keyswitched instrument. By consulting one of these tables you can find all instances of any given articulation.

The following table shows all the ways to include "martelé" strings in an orchestration.

Martelé			
10 Cellos	VCS Martelé up down		P G S
10 Violas	VAS Martelé up down marcato		P G S
10 Violas	VAS Martelé up down		P G S
11 Violins	11V Martelé up down marcato		P G S
11 Violins	11V Martelé up down		P G S
18 Violins	18V Keyswitch fast C0–A#0	A0=up A#0=down	P G S
18 Violins	18V Martelé up down marcato medium		P G S
18 Violins	18V Martelé up down marcato short		P G S
18 Violins	18V Martelé up down		P G S
9 Double Basses	CBS Martelé up down		P G S
Solo Violin	SVL Martelé up down		P G S
Solo Cello	SVC Martelé up down		P G S

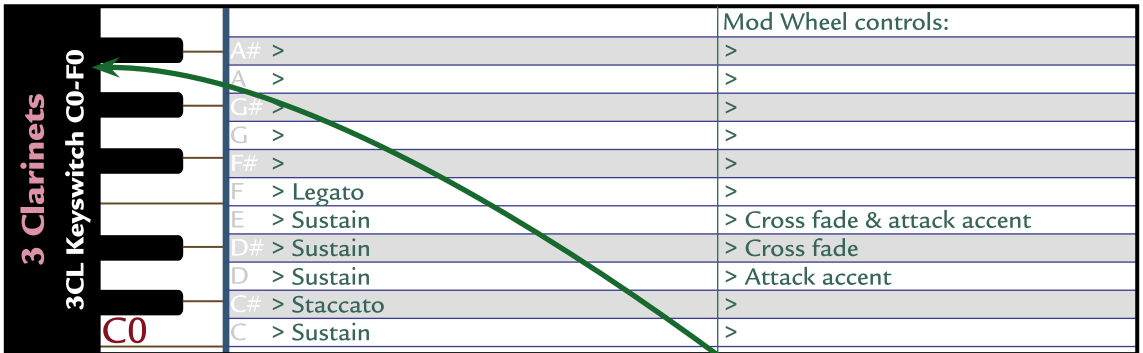
In the tables, the last column indicates which editions (Platinum, Gold, Silver) include this patch.

Articulation specifiers, like Vibrato, that are used so often and in combination with others ("Expressive vibrato crescendo"), do not have their own tables.

About Keyswitch Diagrams

While all three levels of EWQLSO (Platinum, Gold, and Silver) have keyswitch files, those available in Silver are separate from those in Platinum and Gold. All the diagrams use this same form, shown below, but Silver keyswitches are in a separate list at the end of Section 2: Keyswitch Diagrams.

Here's an example, the diagram for one of the *3 Clarinets* keyswitch files:

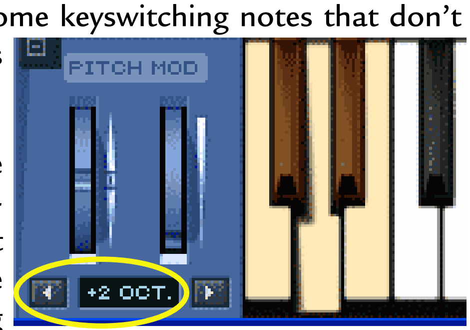


The title at the left matches the name in the list of patches that appears when you select an instrument in the user interface (UI). Note that the name on the screen may be somewhat abbreviated from what's given in the diagram. Also, the name on the computer screen may start with C, F, or S. The meaning of those letters is described in detail in the section about EWQLSO's three mic positions.



In the *3 Clarinets* diagram, we can quickly see that there are 6 keyswitches based on the text to the right of the keyboard. From the "C0" at the bottom, we see that this is the C0 octave. A few very low instruments (*9 Double Basses*, *Contrabassoon*, *4 Trombones*, and *Tuba*) that have playable notes in this octave use a different set of notes for keyswitches, and that is indicated both in this lower-left corner and in the title at the left of the diagram. The diagram also provides information about how the Mod Wheel affects those articulations that respond to its movements.

Be aware that different sequencers may use different names (such as C0, C1 or C2) for what's called C0 here. The MIDI "note number" is consistent, though. The note that EWQLSO calls C0 is note number 24. If you're not sure what note to use, or you add some keyswitching notes that don't seem to have any effect, then try placing them in various octaves until you find what works in your sequencer.



If you're not sure what keys to use on your keyboard, click on the arrow key that moves the display down 1 octave at a time (inside the yellow oval in the figure). When you start the Kompakt player, C1 is at the left end of the keyboard. Clicking once to the left, puts C0 at the left end. If the keyswitch uses notes starting

at C0, you should now see several keys with yellow shading, as in the diagram. Touch keys on your keyboard in various octaves until you see one of the yellow keys depressed, like the D in the diagram. That's the octave in your keyboard that contains the keyswitches. Note that some keyswitch files use a different octave for keyswitches when the instrument can play real notes in this range. See Chapter 6 for more detail.

About Percussion Tables

Each table contains a range of notes and the physical instrument that they play. In some cases, the differences between notes are qualitative, as in the various sounds of bells and anvils.No attempt will be made here to describe those differences; they are referred to only by number: *e.g.*, Anvil 1, Anvil 2, and so on.

Tambourine		
E3	Tambourine	single hit (left hand)
F3	Tambourine	single hit (right hand)
F#3	Tambourine	slow shake (3 sec)
G3	Tambourine	fast shake (2 sec)
G#3	Tambourine	fast shake (3 sec)

CHAPTER 2

Making Music with Symphonic Orchestra

Just as the live orchestral instrument that were sampled to make EWQLSO are usually divided into four families:

- strings
- woodwinds
- brass
- percussion

So too are the instruments in this package. Then the families are further divided into instruments. For example, the strings include violins, violas, cellos, double basses, and harps. EWQLSO makes a further distinction between solo instruments and sections. And in the case of violins, the sections are further broken down to "18 Violins" and "11 Violins" to represent the sounds of the First Violin and Second Violin sections of a traditional orchestra. Therefore, in EWQLSO the concept of *instrument* is slightly different from what we think of in the world of tangible instruments, as explained below.

When you load a sample into the Kompakt player that comes with EWQLSO, you see a hierarchy of levels in the menus that open. Here's what the three levels of menu look like in Platinum.



For now, let's ignore the smallest menu in the middle. That one will be discussed later. It is only present at the Platinum level unless you create your own subfolders.

The menu on the left contains what EWQLSO calls *instruments*. In this figure, there are the five traditional string sections of a full orchestra at the top, plus three solo instruments (cello, harp, and violin), and an extra instrument that reproduces the sound of a very large string section. The menu at the far right (partially cut off at the bottom in this picture) contains what are called *articulations*. These are samples that capture the many ways an instrumentalist can play the instrument.

How to Use EWQLSO Instruments and Articulations

There are many ways to produce a sound from most instruments in a symphony orchestra. Not only does the player have the choice of how loud and soft to play the notes, but also many other options:

- how long to hold the note
- how much of an accent to use at the beginning
- whether to pluck a string or bow it
- whether to use a mute on the instrument
- how to position the mouth when blowing into an instrument (the embouchure)
- and many, many more.

These are the separate articulations that instrumentalists use to add variety, to create emotion, and to carry out the composer's intensions as to the shape of the musical phrase. It is the lack of this variety that makes much electronic sound, well, electronic.

One of the major strengths of the *EastWest / Quantum Leap Symphony Orchestra* is the vast array of articulations at the composer's disposal. By learning to use this set of tools wisely, you can add realism, energy, emotion, and character to the music you write and orchestrate.

Terminology

In discussing how to use the wide variety of samples in EWQLSO, we first need to define some terms. The Kompakt interface has slots for what are called "Instruments." And yet it's articulations and keyswitches that are loaded into those slots. And keyswitches are themselves collections of articulations. This document will use the following terms consistently for strings, woodwinds, and brass. (Percussion instruments do not fall into exactly the same paradigm.)

The 4 definitions below are listed from the largest grouping to the smallest.

Instrument: a solo instrument or orchestral section represented in EWQLSO by multiple articulations. Examples include:

- 18 Violins
- 4 Tenor and Bass Trombones
- Bassoon

Articulation File: what you load into an Instrument slot in the Kompakt sample player. Examples include:

- 18V Exp
- 18V Keyswitch C0–A0
- EHN Legato

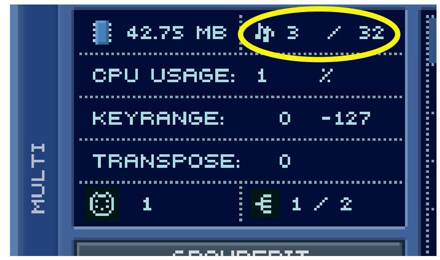
These files have an extension of ".nki" in the file system. In Platinum, there also exist pre-defined Multis with an extension of ".nkm" that contain three articulation files corresponding to the three mic positions discussed in a later section of this Guide.

Articulation: what plays when a note sounds. Keyswitch files contain three or more articulations. Those articulation files that do not contain keyswitches contain only one articulation per file. Each

note plays only one articulation and cannot change articulations mid-note. Articulations contain not only samples, but also information about filters and other sound-shaping parameters.

Samples: the recorded data. An articulation contains a large collection of samples. Each note in an articulation's range plays one or more samples. Some samples are triggered by the start of the note; others are triggered by the end of the note (release tails). More than one sample may play at the same time for a given note, with the relative loudness of the samples controlled by the Mod Wheel or other factors.

You can see how many samples are playing at one time in the Multi display in Kompakt. The screen shot to the right shows that 3 samples are playing out of a maximum polyphony of 32 that has been set for this articulation file. And this screen shot was taken when only one note was being played, showing clearly that what you hear is often a mix of samples.



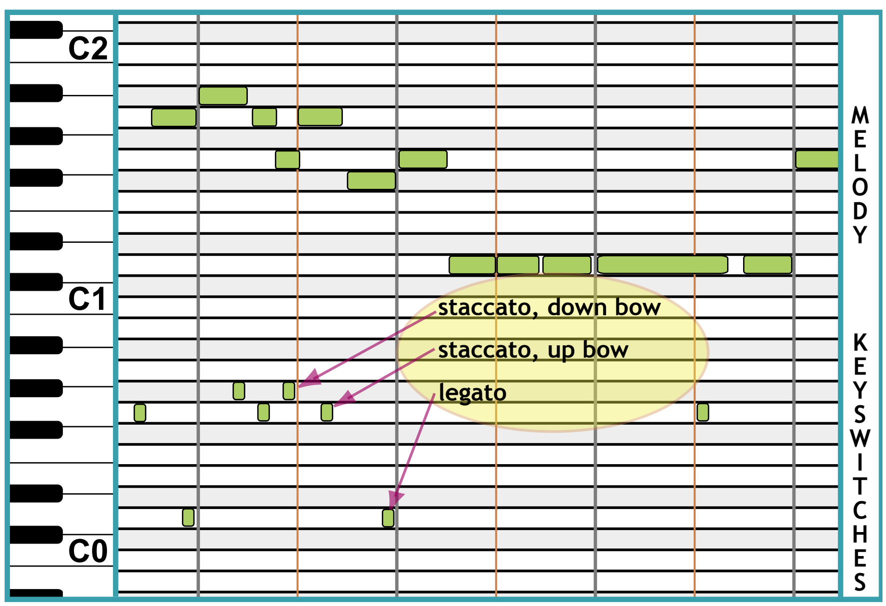
Keyswitch Instruments

Sometimes one instrument needs to play different articulations within a single phrase. For example, some of the notes might best be played legato, and others staccato. While it's possible to put all the staccato notes in one MIDI track, all the legato notes in another track, and then assign a staccato instrument to the first track and a legato instrument to the second track, there are many reasons that's awkward. Keyswitch instruments can often—though not always—simplify the work.

Let's assume there's a keyswitch instrument that includes these notes among the switches:

- D0 assigned to legato
- G0 assigned to staccato, up bow
- G#0 assigned to staccato, down bow

Then you can set up your tracks to look like the following diagram. This drawing is of a Piano Roll, a view available in most sequencers.

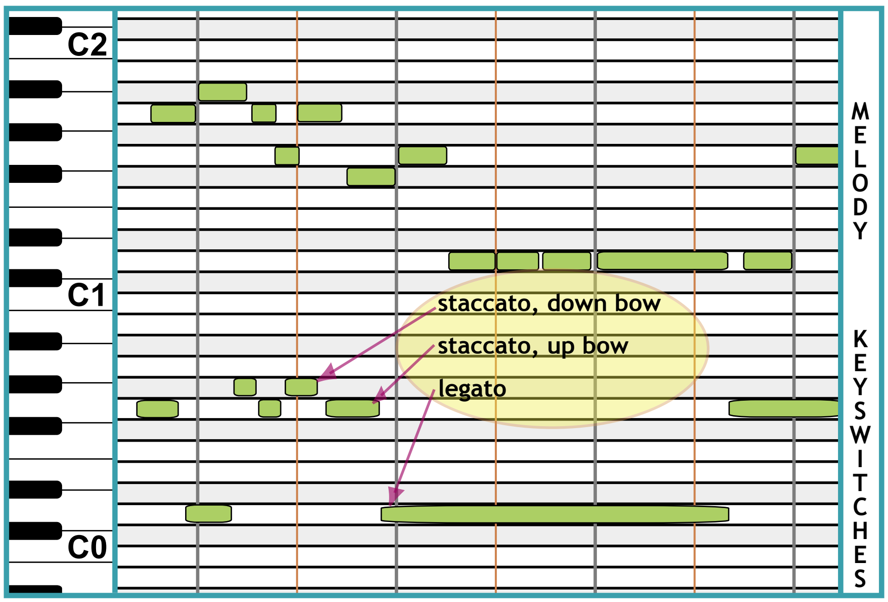


The short notes at the bottom are the keyswitches. They are below the range of the instrument, so they do not make any sound. Note that these notes are slightly before the note they are intended to affect. The first note in the melody (an A) is preceded by the note that means "staccato, up bow," the very short G0 near the beginning. Then, before the B-flat plays, there's a D near the bottom that means "play the next note(s) legato." That's followed by several notes that alternate between "staccato, up bow" and "staccato, down bow."

The second D near the bottom causes not only the G above it to play legato, but also the first 4 D's in a row. A keyswitch remains in effect until another keyswitch is set; in this case, the final G0 stops the legato, and causes the last D and G to play "staccato, up bow."

The exact position in time and the duration of the keyswitches are not important. And their note-off events are ignored. Just make sure the start of the keyswitch is before the first note it is supposed to affect, but after the start of the last note of the previous articulation (if any). For example, the last G0 keyswitch in the picture above can be moved to the left, beyond the orange line, but it cannot be moved to the left of the preceding gray line without also affecting the much longer D1 in the melody.

Hint: Because the note-off at the end of a keyswitch is ignored, some composers like to extend the length of the keyswitch as long as it's in effect, sometimes for many measures. In that way, the current articulation can always been seen in the Piano Roll without having to scroll the window to the left to find the last keyswitch. Using that approach, the previous diagram looks like the diagram at the left. Use whichever look works best for you.



The designers of the keyswitches tried to make groupings that would be most useful to the most composers, that is, collections that reflect the most common articulations used in succession on a single instrument. But compromises have to be made. Too many keyswitches fill up the hard drive and make the on-screen menus too long. A keyswitch with too many articulations loads too much data into memory.

Try to work with these collections when you can, but sometimes you have to break a musical line across two separate MIDI channels, and assign a different articulation to each track.

Modulation Wheel

This library uses the Mod Wheel to cross-fade between samples and to adjust the volume of the accent on some sustain articulations. All articulations that include "Mod" or "XFade" in the name have Mod Wheel cross-fading. Often, the third keyswitch has the Mod Wheel controlling the volume of the accent. In addition, there is sometimes at least one more keyswitch that uses the Mod Wheel within each keyswitch file. A lot of user control has been built into this feature, so use it extensively to add expression to your work.

WARNING: Mod Wheel articulations require you to touch the Mod Wheel before they will work. This includes Mod Wheel articulations located inside keyswitch articulation files.

Cross Fades

A cross fade uses two or more different samples on the same MIDI track and a means to lower the volume of one sample while simultaneously raising the volume on another sample. This fading between the two sample creates a smooth transition from the sound of one to that of the other.

There are three ways that cross fades are used on EWQLSO.:
- a dynamic cross fade (DXF) within a single articulation file
- a cross fade between different articulations within a single articulation file
- a custom cross fade between 2 different articulations created in the Kompakt player

They are quite different, so they will be discussed one at a time.

Dynamic Cross Fades

When a single articulation file contains samples of an instrument played at different dynamic levels (volumes) for every note in the range, the file needs a means for the user to change dynamics smoothly over time. Such a file contains the abbreviation "DXF" in its name, for example, *3FL Sustain DXF*. The standard way in EWQLSO to fade from one volume to another is with the Mod Wheel. On a MIDI keyboard or controller, this is one of two wheels likely to be there. (The other is the Pitch Bend Wheel.) In addition, data for the Mod Wheel can also be entered directly into most software sequencers.

The volume of the audio output from that one track can be controlled by moving the Mod Wheel up and down. In most samples, the volume of the audio output can also be changed using the velocity assigned to each note, but the DXF control can shape the volume even in the middle of a MIDI note, so it provides greater dynamic control over the shape of the musical phrase.

Note for advanced users: There is a separate MIDI control code for volume (#7) that is separate from the Mod Wheel control (#1). EWQLSO uses the Mod Wheel because, in many setups, it's more accessible during real time playing than a volume controller. If you want to use the real MIDI information about volume to control the volume instead, there's a setting in Kompakt's "General Options" dialog that reverts volume control to MIDI control code #7. See the chapter on the Kompakt interface for details.

Other Standard Cross Fades

There are other types of cross fades in a single articulation file, as well. As an example, one of the most common types is the cross fade that affects the attack accent. It is most often the third keyswitch from the bottom (D0, or MIDI note #26). By pushing up on the Mod Wheel, the accent at the very beginning of the note is increased. This attack accent has been created by carefully programming together staccato and sustain layers, plus the use of ambient samples. The effect can be stunning; listen especially to how it sounds in the 4 Trumpets instrument.

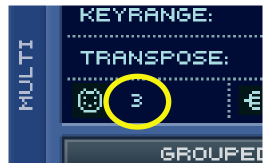
This facility allows the inclusion of accents on selected notes in a musical phrase as well as the ability to grade each accent on a continuous scale from none to barely audible to very strong. The use of such variability to fit the music's phrasing is what adds expression and realism.

Other nuances that have preset cross fades include:

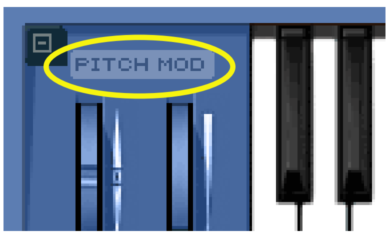
- increasing vibrato
- increasing the sustain of a portato sample
- increasing the "slap" of a double bass

Custom Cross Fades

It is also possible to take any two articulation files and cross fade between them. The most obvious use is to take two similar articulations from the same instrument (Expressive vibrato and Legato vibrato for 18 Violins, for example), though any two files can be used. You might find a reason to fade smoothly between Legato Flute and Legato Oboe, using the Mod Wheel to make the phrase sometimes more like a flute and sometime more like an oboe. Anything is possible.

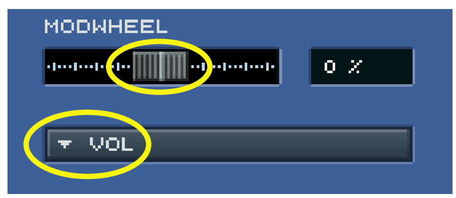


To accomplish this trick, load the two articulation files into the same instance of Kompakt, and set them to the same MIDI channel. This figure shows the channel set to 3 for the current instrument. You can use any available channel from 1 to 8.



Next, with one of the instruments selected, open the Pitchbend and Mod Wheel Options Dialog by clicking on the title "PITCH MOD" directly above the two wheels.

In the middle of the dialog box is a slider control. And below that is a wide "Mod Destination" button. If the button is not already set to Volume, click on it and choose "Vol" from the drop-down menu. Then slide the thumb of the slider control to the left, down to "-100%" in the box on the right.



Then select the other instrument in this cross fade, and set its Mod Wheel control all the way to the right, to "100%." Now you have one instrument whose volume goes from 0% up to 100% as the mod wheel is pushed up, and another instrument on the same channel whose volume goes from 100% down to 0% as the wheel is pushed up. That is, although the overall volume might remain about the same, the mix of the two samples changes gradually from all of one through half-and-half to all of the other.

Multis

A multi is a collection of up to 8 articulation files that can be saved to your hard drive and reloaded at a later time. Think of a multi as a named folder of articulations. The figure on the next page shows a multi in Kompakt that contains seven articulation files.

When saving a multi, you are asked where within your computer's file system to save it. If you are planning to create more than a few multis, you may want to create folders within folders to organize them. The subfolders will show up in the menus that appear when you load a multi into Kompakt.



There are several ways to use the instruments within a multi. One possibility is to use a different MIDI channel (1 to 8) for each articulation. Each channel plays a different track from the sequencer. A second possibility is to assign the same channel number to more than one instrument. This can create layered sounds; for example, a single track in the sequencer can play a flute, legato violin and pizzicato violin in unison. A third option was described in the section on Cross Fades, where the Mod Wheel can be used to fade in one articulation at the same time that a different articulation is fading out.

Of the three levels (Silver, Gold, and Platinum), only Platinum installs a full set of predefined multis on the hard drive. Each of these standard multis contains three files of the same articulation, but at different mic positions. (See the section about Platinum's mic positions above.) For example, the multi for "BCL Legato" contains these three articulation files for the bass clarinet:

- C BCL Legato
- F BCL Legato
- S BCL Legato

If you're planning to use all three versions of an articulation simultaneously, then these predefined multis are a quick way to do so. If you're planning to use only the F mic position for most instruments, for example, and maybe add in C and S selectively, then it's more efficient to define your own multis.

Finally, if you use the same collections of articulations over and over for different projects, then a multi is a fast way to load those collections. However, if you pick and choose articulations anew for each project, then it may not be necessary to define and save multis at all; the selected files are remembered in each instance of the Kompakt VSTi or DXi when the host sequencer saves the project. Of course, saving your choice of articulations as multis may give you the piece of mind that the lists are stored twice: once in the multis and again in the project file, just in case.

Creating a Soundscape

Whether listening to an orchestra live on a stage or from a stereo recording, we're all used to hearing the sounds of the various instruments coming at us from different directions. In a traditional symphonic layout, we expect the violins to be on our left, the cellos and basses on our right, and the flutes a little to the left of center. There are two reasons we might want to continue this practice.

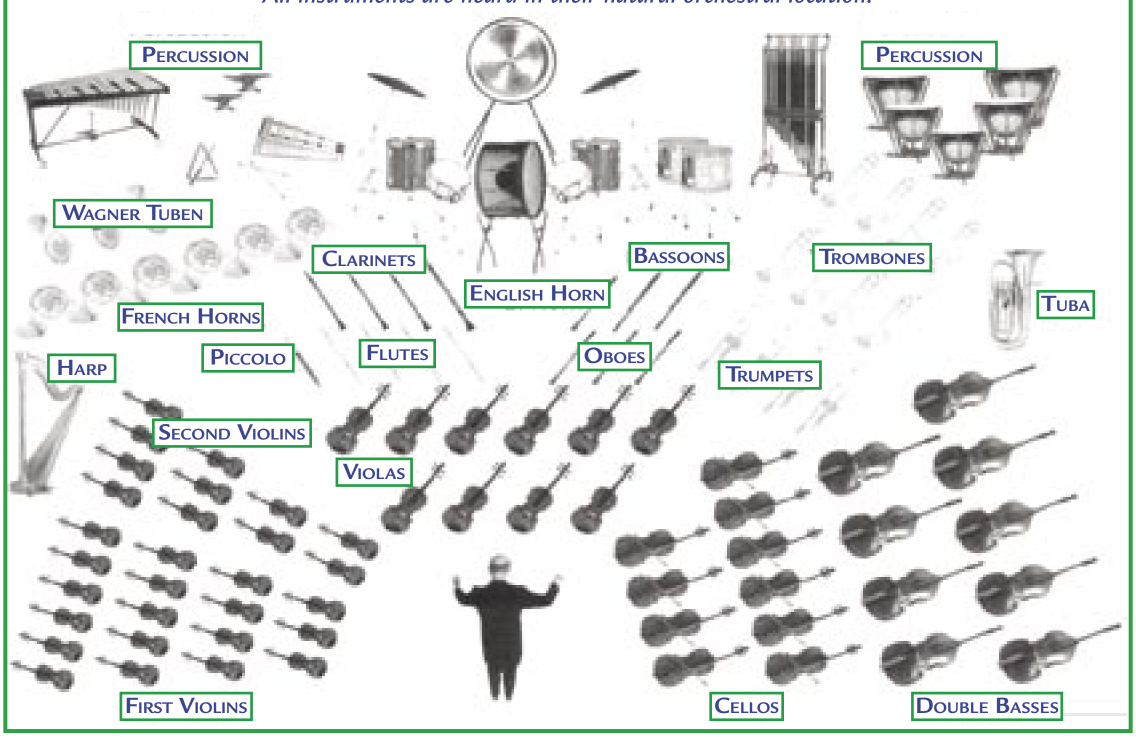
The first is to trick the listener's ear into perceiving a recording of a live performance. Even when everyone understands that the piece was created inside a computer, emulating a traditional sound can have its benefits. The second reason is that it's easier for the human ear to hear two similar sounds as separate when it perceives them as arriving from different locations. If the flute and the violin are doubled, or even playing an octave apart, they will stand out from each other better when they seem to be in separate locations in the soundscape that surrounds us.

Panning

EWQLSO is different from most other collections of orchestral samples in that the panning of the various instruments to the traditional locations on a symphonic stage is built in to the stereo samples. The double basses, for example, are already louder in the right channel. Therefore, one can leave the panning level at "center" for all instruments and they will be correctly placed on the stage in the final mix. Of course, if you want to adjust the panning to achieve your own sound and/or a non-traditional placement of instruments, that can be accomplished both in the Kompakt interface and in the host sequencer.

Note that the natural panning within the EWQLSO samples has one subtle feature that reverb plug-ins do not offer: correctly timed reflections from all surfaces. To understand this concept, consider a double bass player who is 5 meters from the wall to our right and 45 meters from the wall to our left. We are seated half way between the walls The reflection from the right wall, which will be louder in our right ear, travels 30 meters (5 plus 25); the reflection from the left wall, louder in our left ear, travels 70 meters (45 plus 25). That 40-meter difference means that the reflection arrives in our right ear approximately one-ninth of a second sooner than in our left ear, a significant difference. And the bassoon and harp and tuba all have their characteristic left/right delay based on where they sit on the stage. It is impossible for a single reverb to achieve that level of realism.

All instruments are heard in their natural orchestral location.



Proximity Clues

Panning left or right is not the only way to separate instruments. It is also possible to move them forward and backward. This can be achieved in three ways:

- Dynamics relative to timbre
- Delay
- Presence

When most musical instruments change from being played louder to softer the timbre of the sound changes. Even if you let someone else adjust the volume control on your stereo, you can still tell whether the trumpet you're hearing was played loud or soft based on the instrument's tone; most instruments have a harsher sound when played louder. So, in an orchestral mix, if a trumpet seems to be played loud, but the volume level of that instrument compared to others is softer, then the ear assumes the trumpet is farther away. Adjusting independently the timbre—with velocity parameters and/or cross fading—and the volume of the sound, you can move individual instruments forward or backward.

Because sound travels at approximately 340 meters per second (1000 feet per second), the ear uses very small time delays to judge relative distance. If two violins play pizzicato notes simultaneously, and one is 15 meters (50 feet) further away, the note from the more distant violin arrives 0.044 seconds later. That's about one twenty-third of a second, a short time but quite noticeable to the ear. It's very easy in a sequencer to delay a track by a specific time—either with a Delay plug-in or by shifting the notes in the Piano Roll view—and thereby achieve this effect.

As discussed in the section covering Platinum's 3 mic positions, the farther you are from an instrument in a concert hall the more the natural reverberation of the hall contributes to what you notice. (You still hear the echoes from the walls when you're close by; you only notice them less because of how loud the instrument is. It's harder to hear the crinkle of a cough drop wrapper standing near a roaring jet engine than in a hushed concert hall, even though the wrapper makes the same sound.) This "presence" of the sound is another distance clue. Mixing in more of the Close (C) samples for an instrument makes it seem closer to the listener.

By combining all three principles (or the first two if you use Silver or Gold), you can achieve quite convincing front/back positioning in your orchestral mix. Giving the ear contradictory signals can confuse it, achieving either a good or bad effect, depending on your intentions.

And then, of course, there's surround sound, but that discussion is out of scope here.

Volume, Velocity, and Expression

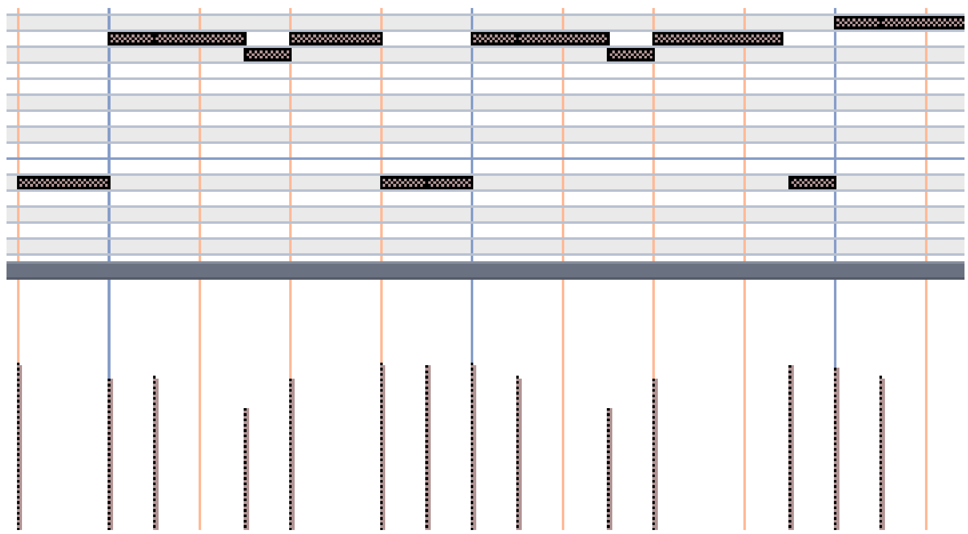
There are at least three ways to make a sampled instrument sound louder, or at least make the real instrument seem to have been played louder. The skilled MIDI orchestrator uses all three.

Volume is just the loudness of the generated sound. Changing volume is basically the same as turning the volume knob on your audio system. A flute played softly can be cranked up; a blasting trumpet can be turned way down.

Volume can be adjusted mid-note; that is, the listener can experience a crescendo or diminuendo for a held note. Even un-natural sounds can be created, such as a crescendo for a single plucked chord on a harp.

And as with a live orchestra, the various instruments are changing their loudness independently, something you cannot do with the stereo's loudness knob.

Velocity, a term based on how fast a keyboard player hits the keys, controls how forcefully the note is played. Adding force changes not only the loudness of the notes, but usually also changes the notes' timbre. With a piano's action, the velocity cannot affect what happens to the sound after the hammers hit and leave the strings, and velocity works the same way here. In the current implementation of MIDI, velocity is usually designated by a number between 0 and 127. And most software sequencers display velocity as vertical bars, something like this diagram.



Most modern sample players, Kompakt included, play different samples for different ranges of velocity. For example, the team creating the samples record Middle C on a solo violin for ***pp***, ***p***, ***mp***, ***mf***, etc. The team then assigns the ***pp*** samples to, say, velocities 0–25, the ***p*** samples to velocities 26–45, and so on. Because each dynamic level of a violin has its own timbre, a note's velocity can affect not only its loudness but also its timbre.

Velocity changes are, therefore, a much better way than volume changes to achieve natural-sounding dynamics. The disadvantage of velocity is that it cannot be changed mid-note. Using the two together gives the orchestrator more control over all aspects of dynamics.

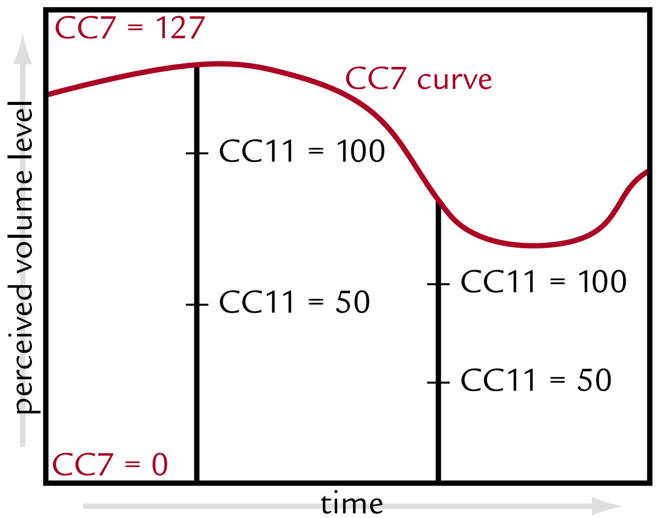
In MIDI, velocity is an attribute of the Note-On message; it can only be transmitted at the onset of a note. Volume, in contrast, is a control code (CC7); it can be transmitted at any time. As discussed earlier, EWQLSO actually uses the Mod Wheel (CC1) to control volume inside dynamic cross fades (DXFs). The various layers within a DXF articulation vary not only in loudness, but also in timbre; therefore, using the Mod Wheel results in natural-sounding dynamics in which the instrument not only gets louder but also has the sound of being played louder.

Expression is represented by another MIDI control code (CC11). In EWQLSO, CC11 is used to control dynamics. It is possible to shape the dynamics of a line either by "playing" a CC11 controller in real time, or by drawing an envelope in a sequencer. Most MIDI keyboards and control surfaces have programmable knobs and/or sliders that can be set to send CC11 messages to a specific MIDI channel. (Sliders are generally more sensitive for real-time control.) If your sequencer supports au-

tomation, it can record the movements of the knob or slider and save them as part of the project. Such manual control over the shape of an instrumental line is usually more efficient than drawing in an envelope, and often achieves more convincing results.

EWQLSO's choice to use CC11 allows CC7 (volume) to be used in other ways. For example, you can use the volume slider in your sequencer to adjust the overall volume level of each track in the mix. The ability to do this is especially helpful in Platinum when using more than one mic position. If you want to experiment with how much C, F, and S of a given instrument to include, use CC7 to do that. Need to hear the solo flute staccato more crisply throughout the piece? Raise the CC7 level for *C SFL Stac* and lower it for *F SFL Stac*. CC11 is somewhat independent and can still adjust dynamics to shape phrases within the tracks. Even if you don't use Platinum, using CC7 to adjust overall levels has many uses.

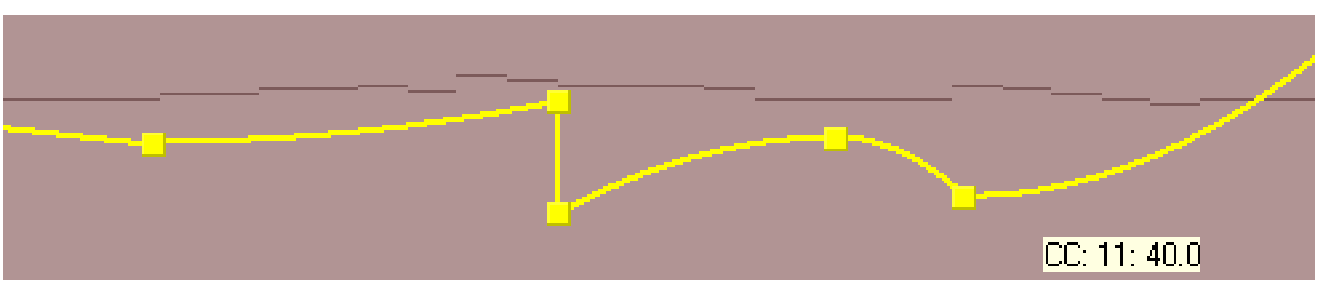
Although the volume and expression controls can be adjusted separately, the volume setting does change how expression affects perceived volume. Think of CC7 as setting an upper limit on the dynamics at any moment. Expression, like most continuously changeable values in MIDI, takes values between 0 and 127. CC7 specifies how loud a sound to generate for the maximum expression, 127. The diagram to the right shows that when volume decreases the fixed changes in expression represent smaller changes in perceived loudness. Changing from an expression level of 50 up to 100 represents a smaller change when the volume control (CC7) is reduced.



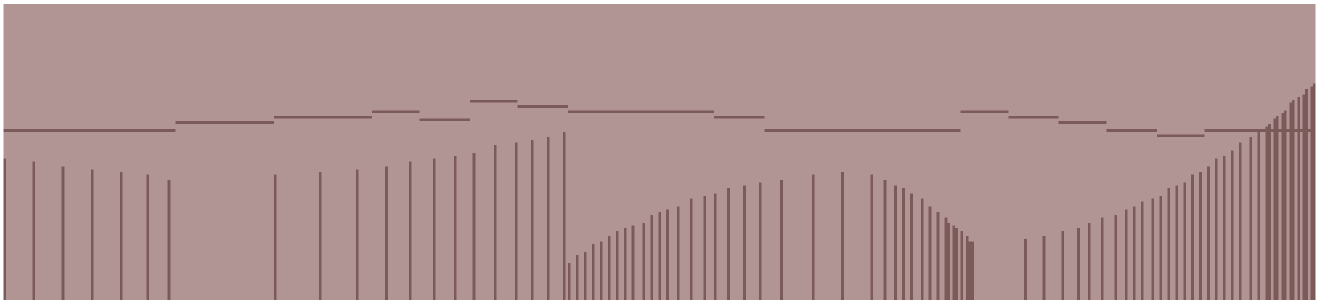
MIDI Envelopes and Control Data

Most modern sequencers let you draw an envelope for the most common MIDI control codes. The diagram with the yellow curve is an example of an envelope for CC11. Notice how the values are constantly changing, the same way a clarinet player modulates his or her breath to shape the musical line, or a cello player adds musicality and interest to a phrase be changing the bow's pressure on the strings moment to moment. (The horizontal lines near the top are the notes.)

When saved as MIDI data, this same envelope appears as a finite set of commands. In a sequencer track, these often appear as vertical lines, each line being a command to change the value—in this case to change CC11.



The other way—and many say the better way—to send CC11 events to the sample player is with a MIDI controller, either a keyboard or a control surface. As long as you or your group has an extra hand—or foot, if you use a pedal—you can enter these control codes while playing the notes into



the sequencer. This allows you to hear the interchange among the notes, their velocities (how hard you're hitting the keys), and the expression being added with CC11.

This process can also be done in two passes—notes first, then control data—if your setup allows you to record automation data to a track that already contains other MIDI data.

Everything written about CC11 in this section also applies to CC1 (Mod Wheel) and all other MIDI control codes. Learning to shape musical lines the same way an instrumentalist does will give your work a more natural musicality. By combining velocity control, expression, Mod Wheel, and volume, you change digital samples into real, living music.

Release Trails

This is an ambient library complete with release trails for the close (C), full (F) and surround (S) samples. The objective was to reduce the need for artificial reverb, which can seriously degrade the realism of the attacks and the body of the ambient samples. The included release trails require a lot of computing power, but they are absolutely worth it! Release trails are not always perfect, because there are many issues involved in programming that prevent this. This is especially true with expressive, swelling, or unlooped samples. One of the unique features of this library (and its included software) is how the release trails are amplitude-matched. The software analyzes the amplitude of the waveform when the key is released, then activates the release trail, automatically adjusting the release trail dynamics so the two samples blend seamlessly. The result is very natural.

The release trails have been preset to a length that enables the library to work in all situations. The user can set the release trails to play out all the way to the end with no fade at all, or very little fade, if desired. This wasn't done because the authors felt that a slightly shorter setting was more pleasing, especially for medium- to faster-paced pieces of music. If you desire a longer ambience, simply use the group editor in Kompakt. Make sure that the Edit All button is not red (is Off). Select one of the release trail groups and add 2 seconds to the decay time. Then go to the next release trail group and do the same. Most programs only have 1–3 release trail groups. Large keyswitch programs and some of the solo brass have many more.

It is also possible to reduce the duration of the release trails. To do so, make sure the instrument is loaded into Kompakt and selected. Click on the Group Edit to open a popup menu with a list of

all the groups. Verify that Edit All is not red (is Off). Look for the section called Group Amp on the right. Turn down the volume control as far as you want; by setting it to zero you turn off the release trails. If you do turn it all the way off, then also set the decay in the Amp Envelope to its shortest setting (lowest number). A short delay frees up computer resources sooner.

If you make changes to the release trails (or to any aspect of an articulation file) and you plan on reusing those changes, then click on Save in the Instrument section of the Kompakt UI and store the file under a new name. You can then reload the modified articulation at any time by name.

Panning

Panning is not usually necessary. Every instrument and section in the library has been recorded in its proper place on stage using custom equipment built by recording engineer Prof. Keith O. Johnson. The full and surround ambiences reflect the position on stage perfectly. The close mics do not reflect the stage-position, because they are close to each instrument. These have been pre-panned through programming to match their true place within the orchestra. You will notice that the close mics have panning values and the full and surround mics do not. You can of course, easily change any panning settings, but it is not recommended.

Articulations

A library that contains all possible articulations for all orchestral instruments is, at the moment, impractically large. At a glance, you may wonder about the choice of included articulations. However, when you use the library, you will find these work really well. The focus was on the most useful and expressive articulations, steering away from sterility. The authors feel strongly that orchestral music should be dynamic, so they provided the articulations you need to achieve that result—without the complexity of some other collections, that in their view, consume far too much time to get a satisfactory result. After all, for busy professional composers who need to output a lot of music, time is money!

Legato

String ensembles in this library feature legato articulations in the keyswitch programs. They are usually the last one or two keyswitches. There are also other legato programs with accents controllable with the mod-wheel. The 6 Horns, 4 Trumpets, and all of the woodwinds also have some form of legato. In general, you will find that all of the samples in this library have a much more flowing, connected sound, than other orchestral sample libraries.

Fake Ensembles

The complete Platinum library includes several large string section programs, as well as a brass ensemble and two woodwind ensembles. See the complete listings of articulations for more details and to see how many of these ensembles are available at each level (Silver, Gold, and Platinum).

Ordering of Articulations

The Kompakt user interface lists instruments and articulations in the order it sees them in the file system; that is, whatever order you would see in a folder in the operating system (Mac OS or Windows) is the order in which they are presented. This Guide uses the same the same ordering, even though the instruments that start with digits appear in a non-traditional order.

Also, this Guide follows the convention of the Platinum version of keeping the four orchestral groupings separate: Strings, Woodwinds, Brass, Percussion, in that order.

Hardware Considerations

The downside of having so many options is the need for lots of computing power. This library is power-hungry, especially when using the Platinum library. Consider this: Each Platinum sample is actually three samples (C+F+S) and the library is 24-bit. Of course, if you don't have enough computing power to run everything simultaneously, you can always compose with one of the stereo pairs (F, most likely), and render all three stereo pairs in turn (F, then C, then S) prior to mixdown. The best advice is to get the fastest computer (or multiple computers) you can afford, with a fast, large (the Platinum library is over 65 GBs), empty hard drive, and 1.5 Gigabytes of free ram (excluding the OS). A dream system at the time of writing would consist of two high end computers for each module: a total of eight computers. If you want to have the entire orchestra at your fingertips with all three ambiences playing back together, you will need even more computers. The samples are 24 bit/44.1KHz. Use 24-bit soundcards, preferably with digital outs, connected to a 24-bit digital mixer. Very soon, performance issues will disappear as computers get faster.

Direct From Disk

Direct From Disk (or "DFD") technology allows the data within samples to be read directly from the hard drive, without all the data being first loaded into memory—or at least *most* of it doesn't have to be preloaded.

The Basics

- A sample player—in this case Kompakt—always reads sample data from buffers in memory. This buffer is necessarily smaller than the length of the whole sample, or else we'd all need huge amounts of RAM. As long as there's always digital data in a buffer ready to be turned into sounds, the sample player can reproduce the original sounds with no delay.

- There are actually two types of buffers: preload and voice.

- There is always a short delay between the time the computer asks for data from the hard drive and the time the data can be delivered to the computer's central processing unit (CPU). The average delay for any model of hard drive is called the "access time." In modern, high quality hard drives, the access time ranges from 4 ms (0.004 second) to 50 ms (0.050 second); the average is about 10 ms. This is not a long time, but definitely noticeable. Plus if the sequencer asks for the samples of 10 notes at once (all on the same down beat, for example), the delay could be 10 times as long before all the data is read into all the voice buffers and ready to go.

- Once the data starts to stream from the hard drive, it can be delivered to a buffer much fast than the sample player needs it; that is, unless the CPU needs to load many, many samples at once. Drives with faster rotations can generally deliver data faster, which is why hard drives with at least 7,200 rpm are recommended, and those with 10,000 rpm are almost a necessity for highly polyphonic music.

- The sample player has to be ready for any note in any loaded articulation file at any time. If, for example, there are 20 articulation files loaded, with an average of 2 octaves (25 notes) per file, that's 400 notes with data ready in memory to be used. Layering of samples means that each note can play more than one sample at a time. There could be over 1000 samples on the ready in preload buffers in memory. And that's before we add the possibility of release trails. Anyway, lots and lots of samples need to have their own preload buffers.

- In order to be ready to play a sample, a short amount of the sample data is written into its preload buffer when the articulation file is first loaded. This buffer has to be long enough that the sample player can start right away and won't run out of data before the following data has been loaded from the hard drive. That is, there needs to be a seamless transition from the preloaded data to the data arriving on demand from the hard drive.

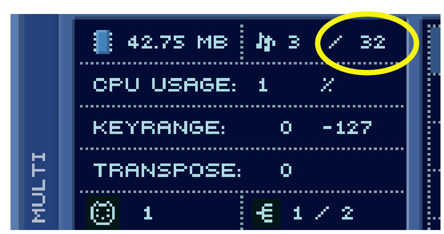
- As long as the CPU can keep up with playing the data already in buffers plus loading new data, continuous music is generated. But when the sample player runs out of data in one or more voice buffers, then gaps, pops, or other undesirable sounds appear.

- When an articulation file is loaded, the sample player needs to know facts about the buffers it's going to create: how many, and how large. The number of preload buffers is fixed for each articulation file. How many voice buffers per articulation file is answered by the Polyphony setting that is configurable in the user interface. The length of the buffers is also configurable.

- It should be clear that the total amount of RAM devoted to buffers in memory can be very, very large. That's one reason sufficient RAM is so important in a DAW.

Sizing Considerations

There are four numbers used when configuring buffers:



- **Polyphony** defines the maximum number of samples that can play at once from the given articulation file. The default number is 32, but that can be changed in the interface by double-clicking on the number 32 and typing in a new value. If voices are heard disappearing too soon—especially release trails—then the number has been set too low. But keep it as low as possible, because unused buffers are a waste of RAM. During playback, you can watch how many voices are playing at any moment. Set the polyphony to be right at, or a little above, the maximum value observed for that articulation file in that piece. And yet be aware that if you set the polyphony barely large enough, then you may encounter problems if you add more note playing simultaneously, or faster phrases in which more notes start before the release trails for earlier notes are finished. As a general rule for projects still being developed, set the polyphony a little higher than the observed maximum, but not a lot higher.

The next three parameters are all configurable in Kompakt's DVD Menu dialog box. Select the Options dropdown and then "DFD (Direct From Disk)" to see the dialog. All settings here are global; that is, they apply to all samples. Changed values do not take effect until the next time buffers are allocated, which means it's best to close and reopen all instances of Kompakt after making these changes.



- **Preload Buffer Size** defines how many kilobytes of memory to allocate for each sample's preload buffer. Larger sizes allow for slower responses from the hard drive, but also consume more of the computer's RAM. A size of 192 KB is a reasonable starting point. Adjust it up or down to find the right balance for your computer's hardware and your usage of samples.

- **Voice Buffer Size** defines how many kilobytes of memory to allocate for the buffers that store the data loaded from disk on demand. Here a good starting point is 384 KB.

- **Reserved Voices** defines how many voice buffers to create in advance. This value has a range from 8 to 256. In general, it should be set to higher values when working on projects that will play a lot of samples simultaneously. It can be set lower, if desired, on a small project using only a few instruments. Be aware, though, that a single instrument that can play a lot of notes very quickly, such as a piano or harp, can eat up a lot of buffers.

A fourth number on this page, **Memory Total**, cannot be set on its own. This value is computed for you by multiplying Voice Buffer Size times Reserved Voices. It calculates the total memory requirements from the two other, so you can see how much RAM your settings will use.

Note that you must click on Apply to have the settings saved; clicking on Exit closes the dialog without saving the changes.

There is a dropdown list (shown with the selection "Expert" in the figure). Selecting Expert allows you to make your own choices for the three values. But there are also four presets with pre-configured settings:

Normal (Medium polyphony / Medium memory)	192KB	384KB	64 voices
High Performance (Medium polyphony / High memory)	384KB	750KB	64 voices
Large Instruments (Low polyphony / High memory)	96 KB	384KB	64 voices
Small Instruments (High polyphony / Medium memory)	192KB	384KB	128 voices

If you find that one or more of these are a close fit to your needs, this dropdown is a quick way to adjust the configuration from one project to the next. You may, though, find that 64, and even 128, voices is too small for large orchestrations.

Finally, note that DFD can be turned on and off from this same dialog box. The lighter blue button behind the words "DFD Active" is a visual indication that DFD is currently enabled. Click on this button to toggle between Active and Inactive. When DFD is disabled, all samples in all articulation files must be loaded into RAM in their entirety.

Virtual Memory

Because the whole point of setting up preload buffers is to avoid the delay caused by loading data from the hard drive, using "virtual memory" is counterproductive. This technology allows the CPU to store more data in memory by letting it swap sections of memory in and out of a holding area. For example, a computer with 1 gigabyte (GB) of actual memory can pretend it has 2 GB by moving sections of data (called "pages") that it doesn't think it will need right away into the holding area, and swapping it back in when needed. The problem is that this holding area is on the hard drive, in something called a "page file" or "swap file." When editing a document, or downloading a file, a delay of 0.050 seconds is not really noticed. When playing samples, you can get gaps and pops. If your operating system supports Virtual Memory, consider turning it off. At this time, it cannot be turned off under OSX on a Mac.

Comparing Platinum, Gold, and Silver

Here are the six most significant ways that the three levels of EWQLSO differ:

- Platinum provides 24-bit samples; Gold and Silver provide 16-bit samples.
- Platinum and Gold are chromatically sampled; Silver's samples are "stretched."
- Platinum provides samples from 3 separate mic positions; Gold and Silver only one
- Platinum and Gold provide release trails on the samples; Silver does not.
- Each level has its own set of articulations.
- The larger the library, the more computing power it usually takes

Sampling depth is a measure of how precisely the digital data in a sample describes the original sound picked up by the microphones. With 16-bit precision, sounds waves are described using numbers from 0 to approximately 65,000. With 24-bit, numbers up to almost 16.8 million can be used. The extra precision allows the subtleties of the orchestral sounds to be included in more detail. The difference contributes to more lifelike capture of all sounds, but is especially apparent in very soft sounds, including the hall's natural reverberation after the instrument has stopped playing.

Even when music will eventually be mixed down to 16-bit precision so it can be written to a music CD (using a process known as dithering), working with 24-bit samples, a 24-bit mixer, and a 24-bit sound card can capture with more detail the way the sounds interact, decay, and reverberate. To most people, the improvement in going from all 16-bit to all 24-bit, though subtle, is noticeable.

And for those planning to create 24-bit tracks for DVDs or other media more advanced than CDs, working entirely in the 24-bit realm is practically essential.

Chromatic sampling means that every note in the instrument's range has its own sample. Silver, though, using resampling technology to play one sample for two or more nearby notes.

Mic positions are discussed in detail in Chapter 3.

Users of Gold should note that the installed files include a few close (C) and surround (S) files so you can try them out and see how they help the sound of your orchestrations. There's also the hope that once you get a taste of them, you'll want to upgrade to Platinum. You can see which files include these extra mic positions by looking for the asterisks in the tables in Chapter 4. A single star (*) indicates that one file, usually C, is included. Two stars (**) mean that both the C and S files are installed. Or look for articulation files in the on-screen menus that start with C or S, instead of the usual F.

Release trails, which play the sound of the hall after the note stops, are not included in Silver.

The quantity of articulation files varies from Platinum's 605 separate articulation files recorded with the F mic (and an equal number for each of C and S) to Gold's 484 down to Silver's 185 articulation files. Note that the number of articulations in Silver is actually somewhat higher than that because of the way its keyswitches are used. See Chapter 6 for more detail about keyswitches.

The Silver library includes 3 instruments not in Gold and Silver: a Steinway B grand piano, an organ, and a choir.

Computer hardware needs to match the power of the software. All the extra samples, functionality, and precision of the larger libraries come with a price: the need for more—and more powerful—hardware. Where Silver can often run on a typical up-to-date home computer, Gold benefits from a high-end computer, or even a pair of computers to share the processing load. Platinum works best with four or more high-end computers, though small projects may get by with a more modest setup.

CHAPTER 3

The 3 Mic Positions

Although the information in this chapter relates mostly to the Platinum version of EWQLSO, much of what is discussed here can help those who own other versions understand how the samples were recorded. In addition, the Gold library does include a selection of samples from the close mics and halls mics. The Silver library contains sample from the F microphones only.

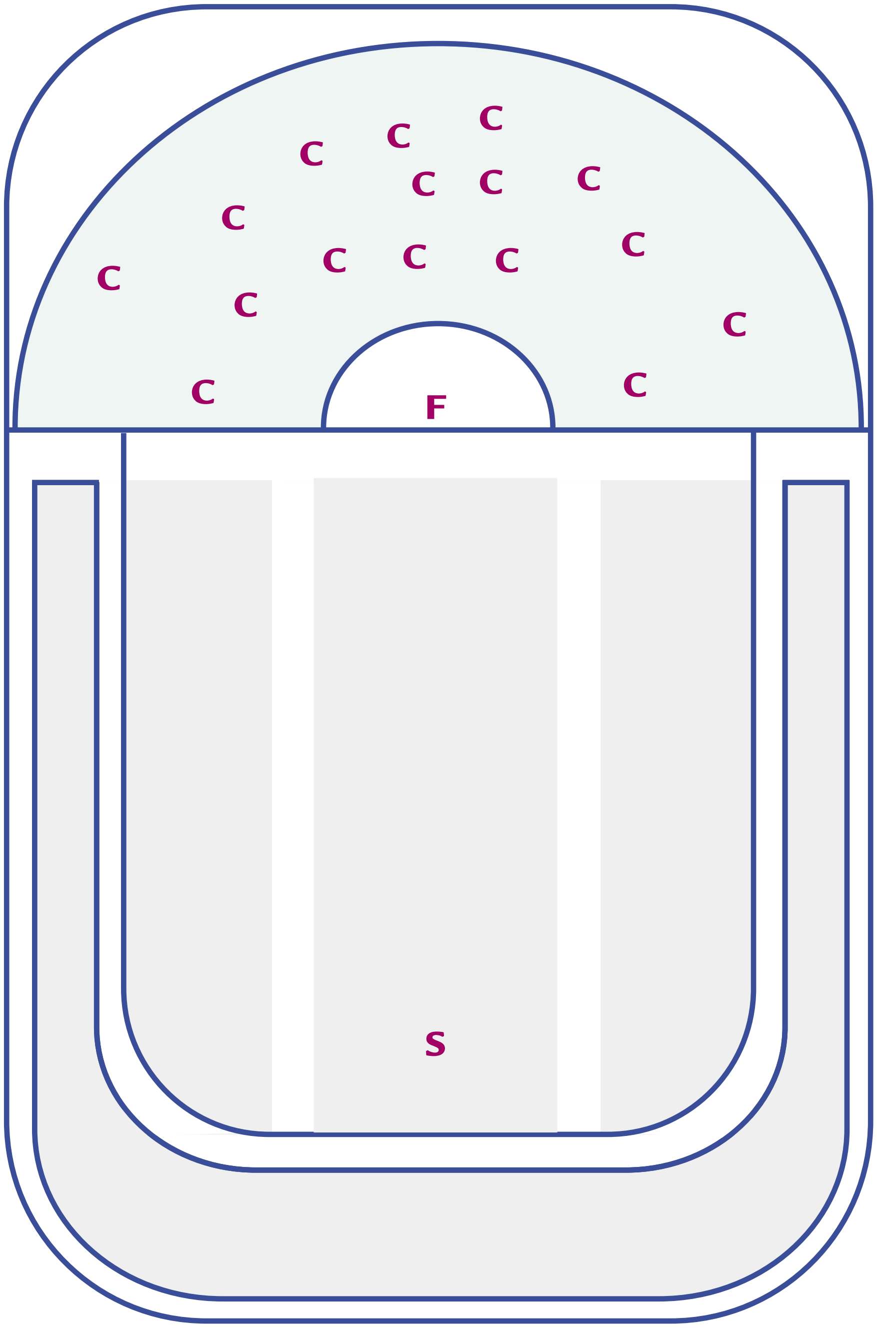
Much has been written about extra efforts of the EWQLSO team to record all samples from three separate microphone positions within the hall. To understand how the three mic positions work, let's perform a quick *Gedankenexperiment* (thought experiment). Imagine yourself in Carnegie Hall with an entire symphony orchestra on the stage.

- First, you're invited to sit directly in front of the oboe player who plays a melody. What you hear approximates the sound recorded in the "close" (C) mic position. The sound coming directly from the instrument is so much louder than the reflections off the walls and other surfaces that these reverberations make up a very small part of what you hear.
- Next, you're placed in a chair at the very front of the stage—or maybe the front row of the house—and you listen to the same oboe melody. Now you hear more of the natural reverberation of the hall because your ears are not so overpowered by the sound coming directly from the oboe. This sound is captured by the "stage" mics, also know as the "full" (F) mics, a cluster of microphones near the front of the stage.
- Finally, you're asked to sit nearer the back of the house and high up, maybe at the front of the Balcony. The same oboe melody is played. From this perspective, the full acoustics of the hall are most evident because your hear clearly the sound bouncing off the ceiling, the walls, all the reflective surfaces, in front of you and even behind. It can be a very lush sound, though perhaps lacking in the immediacy of a closer position; however, adding in a little of this sound (either in a stereo mix or in the rear speakers of a surround-sound recording) can add dimension to the recording. This mic position was used to create the "surround" (S) samples, sometimes called the "hall" mics.

This is the first orchestral sample library to include user control of three simultaneous stereo microphone setups (close, stage and hall) for all instruments and sections. You can mix together any combination of these microphone positions to control tone and ambience. It's like virtually repositioning the listener by incrementally moving out from the close mics, to the stage mics, to the hall mics (known as audio zoom), all in real-time!

In the Platinum library, these samples can be loaded individually, from files with the .nki extension, or all three perspectives at once, from a multi file with the .nkm extension.

All three sets of samples were recorded simultaneously for each note in the library. Therefore, there are predictable and natural delays in the time it take the music to reach the further mics. This latency is the natural reverb of the hall and produces a pleasing fullness to the sound when the samples are mixed. If you want to tighten up the reverb from the S samples, it is possible with modern



By adjusting the relative volume of the samples from the C, F, and S microphones, you can provide an "audio zoom" that approximates the human ear's ability to focus on an instrument the eyes can see at a live performance. This is akin to our knack of picking up a distant conversation at a cocktail party when looking at the speaker, except that you, the orchestrator, control what the listener "sees."

sequencers and mixers to adjust the audio track from the S samples a little forward in time. Either perform a calculation using the speed of sound at sea level (approximately 340 meters/second; 1120 feet/second, if you prefer) or let your ears decide what works best.

The close mics, of course, have virtually no latency: only a small amount necessary to retain the sonic perspective of the orchestra in the concert hall. If you don't use the close mics, and you play something that requires very quick and punchy attacks, you may notice some small delay, which can be cured by adding in some of the close mics. In most cases you would want to use the close mics to add definition to an instrument or section. The idea is to experiment until you find a combination that works.

The picture on the previous page shows the three mic positions drawn in a diagram of a typical concert hall. The semicircular area at the top is where the orchestra sits.

- All the C's represent the various positions of the close (C) mics as they were set up next to each instrument or section. The mics were near enough to capture the presence of the instrument, but far enough away to allow the sound of the instrument to breathe.
- The F represents the approximate positon of the cluster of full (F) mics. These are the samples that appear in all three levels of EWQLSO. They provide a best-seat-in-the-house perspective.
- The S shows approximately where the hall (S) mics were positioned.

During sampling, the simultaneous recordings from all three positions were phase-locked. This attention to detail ensures that the samples can be bounced down to a single audio track without introducing phasing problems.

Many composers still work in stereo only. You can mix all three ambiences together without any phasing issues. You will actually hear a lot of dimension in your stereo mixes. Consider this: if you render a close mix, a full mix, and a surround mix of every song you write, you will have an archive that can be used to create surround mixes in the future. And you know it will work—perfectly! This technique also allows you to do quick, wetter or drier remixes in the future.

Reverb Control

Controlling the reverb can be as easy as adjusting the level of surround (S) mics, and turning on or off the close (C) mics. If you require more control, the volume of the release trails can be altered. Simply use the group editor in the Kompakt interface; choose the release trail group, with Edit All unchecked, and change the volume. Be very careful what you do though; some programs may have the release trails split into many groups. For these, you need to change the volumes of all groups. See the chapter about the Kompakt user interface for more detail.

Some Sound Advice

Generally, in our opinion, the full (F) mix has the best overall sound of the three mixes, but a combination of the three mic setups usually creates the most impressive sound. Many instruments sound best with the close (C) mics turned down in volume (leaving enough of the close mics to add definition).

Try this: Boost the close (C) mics up to 6db (bell shape with a fairly wide Q) between 5K and 10K. Then roll off the frequencies below 800Hz so you are down about 10db at 50Hz. Then mix the C

track into the F track at a low volume to add clarity and sheen to the stage mics. (Be careful not to use too much of the close mics with this EQ curve.) Other instruments may sound just right, using an equal blend of all ambiences. Sordino strings sound best using just the C mics (with no EQ) plus S mics in the mix. The harp sounds great with a little close (C) and lots of F and S. Again, the idea is to experiment until you find a combination that works.

Various Ways to Combine the Samples

Using C and S Mics Sparingly

One possible approach when using the Platinum library to create a stereo mix is to use primarily the F samples and then blend in just enough of the C samples to provide more immediacy to some instruments and enough of the S samples to create a more natural reverb to the overall sound. There's no reason to keep the mix constant for the duration of the piece. Maybe you'll want to add in a little extra C on the solos that need to cut through a multi-layered accompaniment, or push up the S perspective to make the hunting horns sound more distant when they first appear. Use your ear and your imagination to find the best mix for both you and the piece you're working on.

Blending All Three Mics

Another approach is to create three mixes of a piece that are identical except that they were "played" with the three separate sets of samples. Each of the three "takes" (C, F, and S) is bounced down to a stereo track. In a final bounce-down, the volume levels of the three perspectives are adjusted to achieve a single track with the desired sound. This approach can generate either stereo tracks or any of the surround sound formats (4.0, 5.1, LCR+LFE, Matrix UHJ, and many others). More on surround sound comes later.

Go for the Inimate—or the Expansive—Sound

Note that some musical styles can benefit from using the C or S sound as the starting point. The sound of a recorded wind quintet—or other chamber ensemble—might be best approximated by using mostly the C samples. And a dreamy or mysterious soundscape might be more effective when based on the S samples. Let your ears decide.

Highlighting a Soloist Within the Orchestra

Start by creating a track of the soloist based mostly on the C samples, so the sound will stand out. Then push that sound backward in the soundscape a little by adjusting the EQ of the soloist's samples. Give the sound a bit of a boost at the high end, and a cut in the low- and mid-range. This will offset the natural proximity effect of the C samples, and listeners will hear that oboist, for example, sitting in the middle of the woodwind section.

Creating a Soloist Up Front

To bring the soloist to the front of the stage, next to the conductor, as if performing in a concerto, reverse the EQ settings described above: cut the high-end frequencies just a little and boost the mid- and low-end settings. You may want to add just a little extra reverb to the soloist's C samples to make the aound even more prominent.

Beyond the Panning Controls

As mentioned earlier, all EWQLSO instruments take their traditional position on the concert hall stage. And the panning position is reinforced by tiny differences in the arrival of sounds to the left and right mics. Not only do the sounds direct from the instrument have different arrival times, but so also do the reverberations from the left and right walls. This is true, though, only for the F and S mics on the center line of the concert hall; for the C mics, any difference in timing is imperceptible.

To fit properly in the soundscape, the C samples are programmatically panned left or right to simulate their respective positions on the stage (you can see that in the Kompakt interface). But panning only affects relative volume of the two channels.

If you want to pin down perceived location even more strongly when using the C mics, it's possible to time-adjust the left and right channels separately to move the instrument where you want it. To reinforce panning an instrument to the listener's left, first remember that the direct sound in the C mics is stronger than the natural reverb. Therefore, take its EQ'ed left channel audio and move it earlier a few milliseconds; this will simulate the instrument's sound arriving at the left mic first. Also, move its EQ'ed right channel later, as if it took longer for the sound to get to the right microphone. Reverse those direction to pan the instrument to the right.

Surround Sound Samples: Stereo Mixing

When using the S samples for two-channel mixes, adding in a little of the lush sound of the S mics can convincingly convey the feeling of a live recording in a concert hall: well, at least as much as any stereo recording can do that. If you want a realistic concert hall sound, do not over-add the S samples; a little in the mix may be all you need. Those looking for other types of recordings (film scores, audio tracks for games, etc.) should feel free to experiment.

Surround Sound Samples: Surround Sound Mixing

This discussion focuses on the most popular format, 5.1, but the guiding principles apply to these other standards as well.

Here's a starting point for creating the 6 channels you need to create a discreet 5.1 recording. Feel free to experiment with variations.

- Front Center: Take either the left or right signal from the stereo C mics—but *not* both left and right. Use this to create the immediacy needed for the front center.

- Front Left & Right: The F mics (left and right) are assigned to the front speakers (left and right). Add in a little of the S mics here for a lusher overall sound.

- Rear Left & Right: The two rear channels accept input from the two stereo S mics exclusively. Use your judgment about how much signal to send here, based on the type of recording you're creating.

- LFE: The low frequency and effects channel should be pulled from a mix of all the other channels; that is, the relative volume of the various mics (including any time delays and EQ applied separately to discreet channels) should be proportionally applied to the LFE channel. Also be

sure that you use a cross-over to that only passes to the FLE channel frequencies below the cut-off, and that also removes those exact same frequencies from the other 5 channels. Not excluding the low-frequency sounds from the other channels results in inappropriate doubling of those sounds.

CHAPTER 4

Articulations by Instrument

This chapter provides, in a collection of tables, all the articulation files from all three levels of EastWest / Quantum Leap Symphonic Orchestra. The first column lists a full descriptive name for the file, and the second column is the much more abbreviated name that appears in the Kompakt UI. The rightmost column in the tables specifies in which editions the file is included.

Note that Chapter 5 contains some of the same information, but sorted by articulation type. For example, you can see there in one place all the instruments that include a half-step trill.

Platinum contains 605 separate articulation files recorded with the far (F) mic, and an equal number for each of C and S. Gold has 484 of those F files plus a few C's and S's. Silver includes 185 articulation files, though the number of actual articulations is somewhat higher than that because of the way Silver keyswitches are used.

Gold users note: Those articulation file names with a single asterisk (*) include either a close-mic or surround-mic file in addition to the full-mic file. Those with two asterisks (**) include all three files.

The following abbreviations are used in the tables:

- "DFX" = dynamic cross fade (Mod Wheel controls volume)
- "MW" = Mod Wheel
- "→" shows what controls what, as in "velocity → accent"

10 Cellos		
"Butter" legato ***f***	VCS Butter Leg Forte	**P G** S
"Butter" legato	VCS Butter Legato	**P G** S
Crescendo	VCS Crec	**P** G S
Sustain, MW → volume, velocity → accent	VCS DXF Sus Acc Vel	**P G** S
Sustain, MW → vol, velocity → accent, up/down	VCS DXF Sus Acc VL UD	**P G** S
Vibrato sustain, slow attack, DXF	VCS DXF Sus Vib Slow	**P G** S
Vibrato sustain, DXF	VCS DXF Sus Vib	**P G** S
Emotional 1, DFX	VCS Emotn DXF 1	**P G** S
Emotional 2, DFX	VCS Emotn DXF 2	**P G** S
Emotional 3, DFX	VCS Emotn DXF 3	**P G** S
Emotional 4, DFX	VCS Emotn DXF 4	**P G** S
Emotional 1, MW → vol, velocity → accent	VCS Emotn DXF Acc V 1	**P G** S
Evolving Pad	VCS Evolving Pad	**P** G S
Expressive legato, MW → accent	VCS Exp Leg Acc Mod	**P G** S
Expressive legato, MW → volume, velocity → accent	VCS EXP LEG DXF Ac Vl	**P G** S
Vibrato expressive, DXF	VCS Exp Vib DXF	**P G** S
Vibrato expressive, fast attack	VCS Exp Vib FST	**P G** S
Vibrato expressive	VCS Exp Vib	**P G** S
Sustain legato, MW → attack accent	VCS Fast Acc Mod	**P G** S
Flowing	VCS Flowing	**P G** S
Cluster and crescendo effects	VCS FX	**P G** S
Keyswitch sordino (mute) C0–D0	VCS Keysw Sord C0-D0	**P** G S
Keyswitch trill C0–F#0	VCS KeySw TRl C0-F#0	**P G** S
Keyswitch C0–E0	VCS KeySwitch C0-E0	**P G** S
Keyswitch C0–G0	VCS KeySwitch C0-G0	**P G** S
Lyrical, fast attack	VCS Lyr Fast	**P G** S
Lyrical	VCS Lyr	**P G** S
Martelé, up down	VCS Mart Up DN	**P G** S
Non-vibrato sustain, MW cross fade to vibrato	VCS Non Vib-Sus XFD	**P G** S
Non vibrato sustain	VCS Non Vib	**P G** S
Pizzicato	VCS Pizz	**P G** S
Short portato	VCS Port Shrt	**P G** S
Portato	VCS Port	**P G** S

The *10 Cellos* table continues on the next page.

10 Cellos (continued)		
Staccato, up/down bows	VCS Quick Up DN	**P G S**
Soft vibrato MW cross fade to tremolo	VCS Soft Vib XFD Trem	**P G** S
Sustain, MW → attack accent	VCS sus accent mod	**P G S**
Vibrato sustain hard	VCS Sus Vib Hard	**P G S**
Vibrato sustain soft, legato	VCS Sus Vib Soft Leg	**P G** S
Vibrato sustain soft	VCS Sus Vib Soft	**P G S**
Vibrato sustain	VCS Sus Vib	**P G** S
Tremolo legato	VCS Trem Leg	**P G** S
Tremolo	VCS Trem	**P G S**
Half-step trill	VCS Trill H	**P G S**
Whole step trill	VCS Trill W	**P G S**
Silver Master Keyswitch	VCS Master KS	P G **S**
Silver Legato Pedal Keyswitch	VCS Sus Vib DXF Leg pdl KS	P G **S**

10 Violas		
Keyswitch C0–F0	10 VAS KeySw C0-F0	**P G** S
"Butter" legato	VAS Butter Leg	**P G** S
Sustain, MW → volume, velocity → accent	VAS DXF Sus Acc Vel	**P G** S
Emotional 1, DFX	VAS Emotn DXF 1	**P G** S
Emotional 1, MW → vol, velocity → accent	VAS Emotn DXF Acc Vl	**P G** S
Expressive, fast attack, DXF	VAS Exp Fst DXF	**P G** S
Expressive, fast attack	VAS Exp Fst	**P G S**
Expressive, slow attack, DXF	VAS Exp slow DXF	**P G** S
Expressive, slow attack	VAS Exp slow	**P G** S
Expressive legato, MW → attack accent	VAS leg Exp acc MOD	**P G S**
Expressive legato, MW → volume, velocity → accent	VAS leg Exp DXF AC Vl	**P G S**
Legato	Vas Leg	**P G** S
Long marcato	VAS Marc Long	**P G** S
Short marcato	VAS Marc Shrt	**P G** S
Martelé, up/down bows, marcato at top velocities	VAS MArt Up Dn Marc	**P G** S
Martelé, up/down bows	VAS Mart Up Dn	**P G** S
Martelé, up/down bows, short marcato at top velocities	Vas S Mart UD Marc S	**P G** S
Short Martelé, up/down bows	VAS Shrt Mart Up Dn	**P G S**

The *10 Violas* table continues on the next page.

10 Violas (continued)		
Sustain 2	VAS Sus 2	**P** **G** S
Sustain, MW → attack accent	VAS sus accent mod	**P** **G** S
Non-vibrato sustain, MW cross fade to vibrato	VAS Sus NV VIB X-FADE	**P** **G** S
Sustain soft legato	VAS Sus Soft Leg	**P** **G** S
Sustain soft	VAS Sus Soft	**P** **G** S
Sustain	VAS Sus	**P** **G** S
Silver Master Keyswitch	VAS Master KS	P G **S**
Silver Legato Pedal Keyswitch	Vas exp DXF Leg pdl KS	P G **S**

11 Second Violins		
Vibrato sustain, MW → attack accent	11V accent sus mod	**P** **G** S
“Butter” legato *f*	11V Butter Leg Forte	**P** **G** S
“Butter” legato	11V Butter Legato	**P** **G** S
Expressive sustain, MW → volume, velocity → accent	11V DXF EXP acc Vel	**P** **G** S
Expressive, fast attack, DXF	11V DXF EXP Fast	**P** **G** S
Expressive legato, MW → volume, velocity → accent	11V DXF EXP leacc Vl	**P** **G** S
Expressive, slow attack, DXF	11V DXF EXP Slow	**P** **G** S
Vibrato sustain, MW → volume, velocity → accent	11V DXF Sus Vib Ac Vl	**P** **G** S
Emotional 1, DXF	11v Emotn DXF 1	**P** **G** S
Emotional 2, DXF	11v Emotn DXF 2	**P** **G** S
Emotional, MW → volume, velocity → accent	11V Emotn DXF Acc Vl	**P** **G** S
Expressive diminuendo	11V Exp Dim	**P** G S
Expressive	11V Exp	**P** G S
Long glissando	11V Gl L	**P** G S
Short glissando	11V Gl S	**P** G S
Keyswitch Trill C0–E0	11v KeySw Trl C0-E0	**P** **G** S
Keyswitch C0–D0	11v KeySwitch C0-D0	**P** **G** S
Keyswitch C0–F#0	11v KeySwitch C0-F#0	**P** G S
Lyrical A	11V Lyr A	**P** **G** **S**
Lyrical B	11V Lyr B	**P** **G** S

The *11 Second Violins* table continues on the next page.

11 Second Violins (continued)		
Short marcato	11V Marc Short	P G S
Marcato	11V Marc	P G S
Martelé, up/down bows, marcato at top velocities	11V Mart Up Dn Marc	P G S
Martelé, up/down bows, spiccato at top velocities	11V Mart Up Dn Spic	P G S
Martelé, up/down bows	11V Mart Up Dn	P G S
Martelé, 3-way round-robin	11V Med Shrt 3-Way RR	P G S
Staccato up/down bows, marcato at top velocities	11V Quick Up Dn Marc	P G S
Staccato up/down bows, spiccato at top velocities	11V Quick Up Dn Spic	P G S
Staccato up/down bows	11V Quick Up Dn*	P G S
Staccato 3-way round robin	11V Short 3-Way RR	P G S
Staccato, spiccato 3-way round robin	11V Shrt Spic 3Wy RR	P G S
Spiccato	11V Spic	P G S
Non-vibrato sustain, MW cross fade to vibrato	11V Sus NV Vib X-Fade	P G S
Vibrato sustain, slow attack, DXF	11V Sus Vib DXF Slow	P G S
Vibrato sustain, DFX	11V Sus Vib DXF	P G S
Vibrato sustain, hard	11V Sus Vib Hard	P G S
Vibrato sustain legato, soft	11V Sus Vib Soft Leg	P G S
Vibrato sustain, soft	11V Sus Vib Soft	P G S
Vibrato sustain	11V Sus Vib	P G S
Half-step trill	11v Trill h	P G S
Whole-step trill	11v Trill W	P G S
Silver Master Keyswitch	11V Master KS	P G S
Silver Legato Pedal Keyswitch	11V DXF Leg pdl KS	P G S

18 First Violins		
Vibrato legato ***mf***	18V Leg Vib mf	**P G** S
Staccato round-robin (why 11V ?)	18V 11V Short RR	**P G** S
"Butter" legato ***f***	18V Butter Leg Forte	**P G** S
"Butter" legato	18V Butter Legato	**P G** S
Cluster and crescendo effects	18V Clstr & Air	**P G** S
Expressive, fast attack	18V Exp Fast	**P G** S
Expressive	18V Exp	**P G** S
Keyswitch expressive legato C0–C#0	18v KeySw ELeg C0-C#0	**P** G S
Keyswitch fast C0–A#0	18v KeySw Fast C0-A#0	**P** G S
Keyswitch legato C0–C#0	18v KeySw Leg C0-C#0	**P G** S
Keyswitch sordino (mute) C0–D0	18V Keysw Sord C0-D0**	**P G** S
Keyswitch C0–A0	18v KeySwitch C0-A0	**P** G S
Keyswitch C0–D#0	18v KeySwitch C0-D#0	**P G** S
Lyrical, fast attack	18V Lyr Fast	**P G** S
Lyrical	18V Lyr	**P G** S
Long marcato	18V Marc Long	**P G** S
Medium-short marcato	18V Marc Med Short	**P G** S
Short marcato	18V Marc Short	**P G** S
Martelé up/down bows, medium marcato at top velocities	18V Mart Ud Marc Med	**P G** S
Martelé up/down bows, short marcato at top velocities	18V Mart ud marc shrt	**P G** S
Martelé up/down bows	18V Mart Up Dn	**P G** S
Non-vibrato sustain, fast attakc	18V Non Vib Fast	**P G** S
Non-vibrato sustain	18V Non Vib	**P G** S
Pizzicato	18V Pizz	**P G** S
Staccato up/down bows, short marcato at top velocities	18V Quick UD Marc S	**P G** S
Staccato up/down bows, marcato up/down bows at top velocities	18V Quick UD Marc UD	**P G** S
Staccato up/down bows	18V Quick Up Dn*	**P G** S
Staccato 3-way round-robin	18v Short 3-Way RR	**P G** S
Fast slur	18V Slr faST	**P** G S
Medium slur	18V Slr mED	**P** G S
Slow slur	18V Slr sLOW	**P** G S
Extra-fast slur	18V Slr xFaST	**P** G S
Sordino (mute), slow attack	18V Sord Slow**	**P G** S

The *18 First Violins* table continues on the next page.

18 First Violins (continued)		
Vibrato sustain, hard	18V Sus Vib Hard	**P G S**
Vibrato sustain, hard, up/down bows	18V Sus Vib hRD up dn	**P G** S
Vibrato sustain legato, soft	18V Sus Vib Soft Leg	**P G** S
Vibrato sustain, soft	18V Sus Vib Soft	**P G S**
Vibrato sustain	18V Sus Vib	**P G** S
Tremolo legato	18V Trem lEG	**P G** S
Tremolo	18V Trem	**P G S**
Sustain, MW → attack accent	18V accent sus mod	**P G S**
Emotional 1, DXF	18v Emotn DXF 1	**P G** S
Emotional 2, DXF	18v Emotn DXF 2	**P G** S
Emotional 2, MW → volume, velocity → accent	18V Emotn DXF Acc V 2	**P G** S
Emotional 1, MW → volume, velocity → accent	18V Emotn DXF Acc V1	**P G** S
Expressive, fast attack, DXF	18V Exp Fast DXF	**P G** S
Expressive legato, attack accent, DXF	18V Exp LEG ACC DXF	**P G** S
Expressive legato, MW → attack accent	18V Exp LEG ACC MOD	**P G** S
Non-vibrato sustain, MW cross fade to vibrato	18v Non VIb-Sus XF	**P G** S
Non-vibrato sustain, MW cross fade to expressive vibrato, fast	18v NonVib-EXPFST XF	**P G** S
Emotional sordino, MW → volume, velocity → accent	18V Sord Emotn DXF Vl**	**P G** S
Sordino (mute) ???	18V Sord Mod XFD Dyn**	**P G S**
Vibrato sustain, MW → vol & cross fade, noticeable slur at higher velocities	18V Sus VB DXF SLR2VL	**P** G S
Vibrato sustain, MW → vol & cross fade, legato attacks at higher velocities	18V Sus Vib DXF LegVL	**P** G S
Vibrato sustain, slow attack, DXF	18V Sus Vib DXF Slow	**P G** S
Vibrato sustain, MW → vol & cross fade, slight slur at higher velocities	18V Sus Vib DXF SLRVL	**P** G S
Sustain vibrato, DXF	18V Sus Vib DXF	**P G** S
Vibrato sustain, MW cross fade to tremolo	18V Sus-Vib Xf TREM	**P G** S
Silver Master Keyswitch	18V Master KS	P G **S**
Silver Sordino Legato Pedal Keyswitch	18V Sord DXF Leg pdl KS	P G **S**
Silver Legato Pedal Keyswitch	18V Sus Vib DXF Leg pdl KS	P G **S**
Gold's version, so you can hear differences	18VSusVibGOLD	P G **S**

9 Double Basses		
Big sustain	CBS Big Sus	**P G** S
Crescendo	Cbs Crec	**P** G S
Sustain, MW → volume, velocity → accent	Cbs DXF EXP Acc Vel	**P G** S
Sustain, slow attack, DFX	Cbs DXF Sus Slow	**P G** S
Sustain, DXF	Cbs DXF Sus	**P G** S
Emotional 1, DXF	Cbs Emotn DXF 1	**P G** S
Emotional 2, DXF	Cbs Emotn DXF 2	**P G** S
Emotional, MW → volume, velocity → accent	Cbs Emotn DXF Acc Vl	**P G** S
Expressive vibrato with 2 swells	Cbs Exp 2x Crec	**P G** S
Expressive, fast attack, DXF	Cbs EXP Fast DXF	**P G** S
Expressive, fast attack	Cbs Exp fast	**P G** S
Expressive legato, MW → volume, velocity → accent	Cbs EXP LG DXF ACC VL	**P G** S
Expressive	Cbs Exp	**P G** S
Forte piano	Cbs Forte Piano	**P G S**
Cluster and crescendo effects, plus slaps	Cbs FX	**P G** S
Keyswitch C3–D#3	CBS KeySwitch C3-D#3	**P G** S
Keyswitch C3–F#3	CBS KeySwitch C3-F#3	**P G** S
Martelé up/down bows	CBS Mart Up Dn	**P** G S
Pizzicato, MW → bow slaps	CBS Pizz mod slaps	**P G** S
Pizzicato	CBS Pizz	**P G** S
Portato	Cbs Port	**P G** S
Staccato up/down bow, MW → bow slaps	CBS Quick UD Mod Slap*	**P G** S
Staccato up/down bows	CBS Quick Up Dn*	**P G S**
Sforzando	CBS Sforzando	**P** G S
Bow slaps	Cbs Slaps	**P G** S
Sustain, MW → attack accent	CBS sus accent mod	**P G S**
Vibrato sustain, hard	Cbs Sus Vib Hard	**P G S**
Vibrato sustain legato, soft	Cbs Sus Vib Soft Leg	**P G** S
Vibrato sustain, soft	Cbs Sus Vib Soft	**P G S**
Vibrato sustain, MW → non-vibrato	Cbs Sus Vib X-Fade	**P G S**
Vibrato sustain, MW cross fade to tremolo	Cbs Sus Vib Xf Trem	**P G** S
Vibrato sustain	Cbs Sus Vib	**P G** S
Tremolo legato	Cbs Trem Leg	**P G** S
Tremolo	Cbs Trem	**P G** S
Silver Master Keyswitch	CBS Master KS	P G **S**
Silver Legato Pedal Keyswitch	CBS Sus Vib DXF Leg pdl KS	P G **S**

Cello		
Expressive double bow	SVC Double Bow Exp	**P G S**
Expressive down-bow	SVC Exp Dn	**P** G S
Expressive up-bow	SVC Exp up	**P** G S
Expressive vibrato	SVC Exp Vib	**P** G S
Keyswitch C0–A0	SVC KeySwitch C0-A0	**P** G S
Keyswitch C0–E0	SVC KeySwitch C0-E0	**P** G S
Vibrato legato	SVC Leg Vib	**P G S**
Marcato	SVC Marc	**P** G S
Martelé up/down bows, marcato at top velocities	SVC Mart Up Dn Marc	**P** G S
Martelé up/down bows	SVC Mart Up Dn	**P** G S
Non vibrato sustain	SVC Non Vib	**P** G S
Non-vibrato, attack accent, MW → volume & cross fade to vibrato	SVC NV Vib DXF ACC	**P** G S
Slur	SVC Slur	**P** G S
Sustain, attack accent	SVC Sus Accent	**P** G S
Vibrato sustain, hard	SVC Sus Vib Hard	**P** G **S**
Vibrato sustain, smooth	SVC Sus Vib Smooth	**P G S**
Vibrato sustain, attack accent, DXF	SVC Vib DXF ACC	**P** G S
Silver Master Keyswitch	SVC Master KS	P G **S**
Silver Legato Pedal Keyswitch	SVC Sus DXF Leg pdl KS	P G **S**

Harp		
Harmonics	Harp Harm	**P** G S
Pluck, long release	Harp Pluck long*	**P G** S
Pluck, designed for creating arpeggios	Harp pluck roll*	**P G** S
Pluck, short release	Harp Pluck short*	**P G S**
Pluck, medium release	Harp Pluck*	**P G** S

Large String Section		
50-piece strings, layered, fast attack	50 Piece Str Sec Fst	**P G** S
50-piece strings, layered, legato	50 Piece Str Sec Leg	**P G** S
50-piece strings, layered, sustain	50 Piece Str Sec Sus	**P G** S
60-piece strings, layered, expressive	60 PIece Str Sec eXP	**P G** S
60-piece strings, layered, pizzicato	60 Piece Str Sec Pizz	**P G S**
60-piece strings, layered, sustain	60 Piece Str Sec Sus	**P** G S
70-piece strings, layered, expressive	70 pIECE sTR sec eXP	**P** G S
70-piece strings, layered, sustain	70 Piece Str Sec Sus	**P** G S

Violin		
Crescendo	SVL Crec	**P** G S
Expressive 1	SVL Exp 1	**P** G S
Expressive 2	SVL Exp 2	**P** G **S**
Expressive crescendo	SVL Exp Crec	**P** G S
Keyswitch C0–A0	SVL KEYSWITCH C0-A0	**P** G S
Keyswitch C0–D0	SVL KEYSWITCH C0-D0	**P** G S
Vibrato legato	SVL Leg Vib	**P** **G** **S**
Vibrato Marcato	SVL Marc Vib	**P** G S
Martelé up/down bow	SVL Mart Up Dn	**P** **G** S
Non-vibrato, hard	SVL Non Vib Hard	**P** G **S**
Non-vibrato, soft	SVL Non Vib Soft	**P** G S
Non-vibrato sustain, DXF	SVL NV DXF	**P** G S
Non-vibrato, MW → volume & cross fade to vibrato	SVL NV Vib DXF	**P** G S
Slur	SVL Slur	**P** G S
Vibrato sustain, crescendo on release	SVL Sus Vib Crec Rel	**P** G S
Vibrato sustain, hard	SVL Sus Vib Hard	**P** **G** **S**
Vibrato sustain, soft	SVL Sus Vib Soft	**P** **G** S
Vibrato sustain, DXF	SVL Vib DXF	**P** G S
Silver Master Keyswitch	SVL Master KS	P G **S**
Silver Legato Pedal Keyswitch	SVL Sus Vib DXF Leg pdl KS	P G **S**

3 Clarinets		
Keyswitch C0–F0	3cl Keyswitch C0-F0	**P** **G** S
Legato	3Cl Legato	**P** **G** S
Staccato	3Cl Stac	**P** **G** **S**
Sustain, MW → volume, velocity → accent	3cl Sus DXF Acc Vel	**P** **G** **S**
Sustain, DXF	3cl Sus DXF	**P** **G** S
Sustain, cross fade	3cl Sus X-Fade	**P** **G** S
Sustain, non-vibrato	3Cl Sus	**P** **G** **S**
Silver Master Keyswitch	3CL Master KS	P G **S**
Silver Legato Pedal Keyswitch	3CL Sus DXF Leg pdl KS	P G **S**

3 Flutes		
Emotional, DXF	3FL Emotn DXF	**P G** S
Expressive diminuendo	3FL Exp dim	**P G** S
Long glissando	3FL GLiss L	**P** G S
Short glissando	3FL GLiss S	**P** G S
Grace notes	3FL Grace	**P** G S
Keyswitch C0–F0	3FL keysw C0-F0	**P G** S
Keyswitch Trill C0–G0	3FL keysw Trl C0-G0	**P G** S
Legato	3FL Legato	**P G** S
Non-vibrato sustain, cross fade to vibrato	3FL Non Vib-Sus XF	**P G** S
Non-vibrato sustain	3FL Non Vib	**P G** S
Staccato	3FL Stac	**P G** S
Sustain, MW → volume, velocity → accent	3FL Sus DXF aCC vEL	**P G S**
Sustain, MW → volume & cross fade	3FL Sus DXF	**P G** S
Sustain, fast attack	3FL Sus FST	**P G** S
Sustain	3FL Sus	**P G S**
Half-step trill	3FL Trill H	**P G S**
Whole-step trill	3FL Trill W	**P G S**
Silver Master Keyswitch	3FL Master KS	P G **S**
Silver Legato Pedal Keyswitch	3FL Sus DXF Leg pdl KS	P G **S**

3 Oboes		
Sustain, MW → volume, velocity → accent	3OB DXF Sus Acc Vel	**P G** S
Sustain, MW → volume & cross fade	3OB DXF Sus	**P G S**
Expressive	3OB Exp	**P** G S
Grade notes	3Ob Grace	**P** G S
Keyswitch Trill C0–F0	3Ob Keysw Trl C0-F0	**P** G S
Keyswitch C0–D0	3Ob Keyswitch C0-D0	**P** G S
Keyswitch C0–F0	3Ob Keyswitch C0-F0	**P** G S
Legato	3Ob Legato	**P** G S
Non-vibrato sustain, cross fade to vibrato	3Ob Non Vib-Sus XF	**P** G S
Non-vibrato sustain	3OB Non Vib	**P** G S
Staccato	3Ob Stac	**P G** S
Vibrato sustain	3Ob Sus ViB	**P G S**

The *3 Oboes* table continues on the next page.

3 Oboes (continued)		
Half-step trill	3Ob Trill H	**P** G S
Whole-step trill	3Ob Trill W	**P** G S
Silver Master Keyswitch	3OB Master KS	P G **S**
Silver Legato Pedal Keyswitch	3OB Sus DXF Leg pdl KS	P G **S**

Alto Flute		
Expressive, attack accent, DXF	AFL Exp DXF ACC	**P** G S
Expressive, DXF	AFL Exp DXF	**P** G S
Expressive legato, bright	AFL Exp Legato Bright	**P** G S
Expressive legato, lyrical	AFL Exp Legato Lyric	**P** G S
Exressive legato	AFL Exp Legato	**P** G S
Expressive	AFL ExP	**P** G S
Keyswitch C0–E0	AFL keyswitch C0-E0	**P** G S
Legato, attack accent, DXF	AFL Legato DXF ACC	**P** G S
Legato	AFL Legato	**P** G S
Non-vibrato sustain	AFL Non Vib	**P** G S
Non-vibrato sustain, cross fade to vibrato	AFL NV Vib XFADE	**P** G S
Run up & down	AFL Run Up Dn	**P** G S
Staccato	AFL Stac	**P** G S
Vibrato sustain	AFL Sus Vib	**P** **G** **S**
Silver Master Keyswitch	AFL Master KS	P G **S**
Silver Legato Pedal Keyswitch	AFL Sus Vib DXF Leg pdl KS	P G **S**

Bass Clarinet		
Expressive, fast crescendo	BCL Exp Fast	**P** **G** S
Expressive	BCL Exp	**P** **G** S
Glissando	BCL gl m	**P** G S
Keyswitch C0–F#0	BCL keyswitch C0-F#0	**P** **G** S
Legato, MW → attack accent	BCL Leg Accent Mod	**P** **G** S
Legato	BCL Legato	**P** **G** S
Portato	BCL Port	**P** **G** S
Staccato	BCL Stac	**P** **G** **S**
Sustain, DFX	BCL Sus DXF	**P** **G** S
Sustain, hard	BCL Sus Hard	**P** **G** **S**
Sustain, medium	BCL sus medium	**P** **G** **S**
Sustain, soft	BCL Sus Soft	**P** **G** **S**
Silver Master Keyswitch	BCL Master KS	P G **S**
Silver Legato Pedal Keyswitch	BCL Sus DXF Leg pdl KS	P G **S**

Bassoon

Expressive, long crescendo	BSN Exp Long Crec	**P G** S
Expressive, short crescendo	BSN Exp Short	**P G** S
Vibrato, ***f***	BSN Forte	**P G** S
Glissando	BSN Gliss	**P** G S
Keyswitch C0–D0	BSN keySwitch C0-D0	**P G** S
Keyswitch C0–G0	BSN keySwitch C0-G0	**P G** S
Legato	BSN Legato	**P G** S
Non-vibrato sustain	BSN Non Vib	**P G** S
Portato	BSN Port	**P G** S
Staccato	BSN Stac	**P G S**
Sustain, MW → attack accent	BSN Sus Accent Mod	**P G** S
Vibrato sustain	BSN Sus Vib	**P G S**
Vibrato sustain, cross fade	BSN Vib Xfade	**P G** S
Silver Master Keyswitch	BSN Master KS	P G **S**
Silver Legato Pedal Keyswitch	BSN Sus Vib DXF Leg pdl KS	P G **S**

Clarinet

Expressive, fast crescendo	SCL Exp Fast	**P G** S
Expressive, slow crescendo	SCL Exp Slow Crec	**P G** S
Keyswitch C0–D0	SCL keyswitch C0-D0	**P G** S
Keyswitch C0–F#0	SCL keyswitch C0-F#0	**P G** S
Legato	SCL Legato	**P G** S
Non-vibrato sustain	SCL Non Vib	**P G S**
Portato	SCL Port	**P G** S
Staccato	SCL Stac	**P G S**
Sustain, MW → attack accent	SCL Sus Accent Mod	**P G** S
Silver Master Keyswitch	SCL Master KS	P G **S**
Silver Legato Pedal Keyswitch	SCL Non Vib DXF Leg pdf KS	P G **S**

Concert Flute

Vibrato sustain, MW → attack accent	SFL Accent Mod	**P G S**
Expressive legato	SFL Exp Legato	**P G** S
Falls (fast downward octave runs)	SFL Fall	**P G** S
Flutter tongue, MW → flutter	SFL Flutter Mod	**P** G S
Grace notes	SFL Grace	**P G** S

The *Concert Flute* table continues on the next page.

Concert Flute (continued)		
Keyswitch C0–D0	SFL keyswitch C0-D0	**P** **G** S
Keyswitch C0–F#0	SFL keyswitch C0-F#0	**P** **G** S
Legato	SFL Legato	**P** **G** S
Lush, MW → attack accent	SFL Lush Accent Mod	**P** **G** S
Lyrical	SFL Lyrical	**P** **G** S
Non-vibrato sustain	SFL Non Vib	**P** **G** S
Vibrato expressive 2, slow crescendo	SFL Slow exp 2	**P** **G** S
Vibrato expressive, slow crescendo	SFL Slow EXP	**P** **G** S
Staccato ??	SFL Stac Fast	**P** **G** S
Staccato	SFL Stac	**P** **G** **S**
Vibrato sustain, bright	SFL Sus Vib Bright	**P** **G** S
Vibrato sustain	SFL Sus Vib	**P** **G** **S**
Vibrato sustain 2, attack accent, DXF	SFL Vib DXF 2 ACC	**P** **G** S
Vibrato sustain 2, DXF	SFL Vib DXF 2	**P** **G** S
Vibrato sustain, DXF	SFL Vib DXF	**P** **G** S
Silver Master Keyswitch	SLF Master KS	P G **S**
Silver Legato Pedal Keyswitch	SFL Sus Vib DXF Leg pdl KS	P G **S**

Contrabassoon		
Vibrato expressive, short crescendo	CTB Exp Short	**P** G S
Vibrato expressive	CTB Exp	**P** G S
Glissando	CTB GLiss	**P** G S
Grace notes	CTB Grace	**P** G S
Keyswitch C3–D3	CTB keyswitch C3-D3	**P** G S
Keyswitch C3–F#3	CTB keyswitch C3-F#3	**P** G S
Legato	CTB Legato	**P** **G** S
Portato ***f***	CTB Port F	**P** G S
Staccato	CTB STAC	**P** **G** **S**
Sustain, MW → attack accent	CTB Sus Accent Mod	**P** **G** S
Sustain, DXF	CTB Sus DXF	**P** **G** S
Sustain	CTB Sus	**P** **G** **S**
Vibrato, attack accent, DXF	CTB Vib DXF ACC	**P** **G** S
Vibrato. DXF	CTB Vib DXF	**P** G S
Silver Master Keyswitch	CTB Master KS	P G **S**
Silver Legato Pedal Keyswitch	CTB Sus DXF Leg pdl KS	P G **S**

English Horn		
Vibrato expressive	EHN Exp	**P** **G** S
Falls (fast downward octave runs)	EHN Fall	**P** G S
Glissandos (4-note upward run)	EHN Gliss	**P** G S
Grace notes	EHN Grace	**P** G S
Keyswitch C0–D0	EHN Keyswitch C0-D0	**P** **G** S
Keyswitch C0–F#0	EHN Keyswitch C0-F#0	**P** **G** S
Legato, DXF	EHN Legato DXF	**P** **G** S
Legato	EHN Legato	**P** **G** S
Legato (new in 2.5)	EHN nEW lEGATO	**P** **G** S
Non-vibrato sustain	EHn Non Vib	**P** **G** S
Non-vibrato sustain, MW → volume & cross fade to vibrato	EHN nV Vib DXF	**P** **G** S
Non-vibrato sustain, cross fade to vibrato	EHN nV Vib XFad	**P** **G** S
Legato slide	EHN Slide	**P** **G** S
Staccato	EHN Stac	**P** **G** S
Sustain, MW → attack accent	EHN Sus Accent Mod	**P** **G** S
Vibrato sustain	EHN Sus Vib	**P** **G** **S**
Vibrato sustain, DFX	EHN Sus-Vib DXF	**P** **G** S
VIbrato sustain, attack accent, DFX	EHN Vib DXF ACC	**P** **G** S
Silver Master Keyswitch	EHN Master KS	P G **S**
Silver Legato Pedal Keyswitch	EHN Sus Vib DXF Leg pdl KS	P G **S**

Oboe		
Expressive, attack accent, DXF	SOB EXP DXF ACC	**P** **G** S
Expressive, DXF	SOB EXP DXF	**P** **G** S
Vibrato expressive	SOB Exp Vib	**P** **G** S
Falls (fast downward octave runs)	SOB Fall	**P** **G** S
Glissandos (4-note upward run)	SOB Gliss	**P** **G** S
Grace notes	SOB Grace	**P** **G** S
Keyswitch Trill C0–F0	SOB keysw Trl C0-f0	**P** **G** S
Keyswitch C0–D0	SOB keyswitch C0-d0	**P** **G** S
Keyswitch C0–G0	SOB keyswitch C0-G0	**P** **G** S
Legato	SOB Legato	**P** **G** S
Legato (new to 2.5) ???	SOB New Leg Interval	**P** **G** S
Legato (new to 2.5)	SOB New Legato	**P** **G** S
Non-vibrato sustain	SOB Non Vib	**P** **G** S

The *Oboe* table continues on the next page.

Oboe (continued)		
Non-vibrato sustain 2, MW → volume & cross fade to vibrato	SOB NV Vib DXF 2	**P** **G** S
Non-vibrato sustain, MW → volume & cross fade to vibrato	SOB NV Vib DXF	**P** **G** S
Non-vibrato sustain, cross fade to vibrato	SOB NV Vib XFade	**P** **G** S
Sforzando	SOB Sfz	**P** **G** S
Slide	SOB Slide	**P** **G** S
Staccato	SOB Stac	**P** **G** **S**
Sustain, MW → attack accent	SOB Sus Accent Mod	**P** **G** S
Vibrato sustain	SOB Sus Vib	**P** **G** **S**
Half-step trill	SOB Trill H	**P** **G** **S**
Whole-step trill	SOB Trill W	**P** **G** **S**
Silver Master Keyswitch	SOB Master KS	P G **S**
Silver Legato Pedal Keyswitch	SOB Sus Vib DXF Leg pdl KS	P G **S**

Piccolo Flute		
Expressive	PFL Exp	**P** G S
Glissando (4-note upward run)	Pfl Gliss	**P** G S
Keyswitch Trill C0–F0	PFL KEysw Trl C0-F0	**P** **G** S
Keyswitch C0–E0	PFL KEyswtich C0-E0	**P** G S
Legato	PFL Legato	**P** **G** S
Staccato	Pfl Stac	**P** **G** **S**
Vibrato sustain, MW → attack accent	PFL Sus Accent Mod	**P** **G** S
Vibrato sustain	PFL Sus Vib*	**P** **G** **S**
Half-step trill	PFL Trill H	**P** **G** S
Whole-step trill	PFL Trill W	**P** **G** S
Vibrato sustain, attack accent, DXF	PfL Vib DXF ACC	**P** **G** S
Vibrato sustain, DFX	PfL Vib DXF	**P** **G** S
Silver Master Keyswitch	PFL Master KS	P G **S**
Silver Legato Pedal Keyswitch	RFL Sus Vib DXF Leg pdl KS	P G **S**

Woodwind Ensemble		
Woodwind ensemble 1	Woodwind ENS 1	**P** G S
Woodwind ensemble 2	WoodWind ENS 2	**P** G S

3 Wagner Tuben		
Big sustain	3WT Big Sus	**P** G S
Glissando rips	3WT rip	**P** G S
Sustain, portato at high velocity	3WT sus PORT	**P** G S
Sustain, MW cross fade	3WT sus x-FADE 2-WAY	**P** G S

4 Tenor and Bass Trombones		
Long crescendo	4TB Crec L	**P** G S
Medium crescendo	4TB Crec M	**P** G S
Short crescendo	4TB Crec S	**P** G S
Flutter tongue	4TB Flutter	**P G** S
Forte piano	4TB Forte Piano	**P G** S
Forte piano, crescendo on release	4TB Forte-P Rel Crec	**P G** S
Keyswitch A-1–B-1	4TB KEYSWITCH A-1 B-1	**P G** S
Keyswitch A-1–D#0	4TB KEYSWITCH A-1-D#0	**P G** S
Portato accented	4TB Port Accent	**P G** S
Portato, cross fade to sustain	4TB Port Sus X-Fade	**P G** S
Portato	4TB Port	**P G** S
Fast staccato	4TB Stac fast	**P G S**
Staccato	4TB Stac	**P G** S
Accented sustain, DFX	4TB Sus ACC DXF	**P G** S
Sustain, MW → attack accent	4TB Sus accent Mod	**P G** S
Sustain, DFX	4TB Sus DXF	**P G** S
Sustain, MW cross fade to accented	4TB Sus X-FADE accent	**P G** S
Sustain, MW cross fade	4TB Sus X-FADe	**P G S**
Sustain	4TB Sus	**P G S**
Silver Master Keyswitch	4TB Master KS	P G **S**
Silver Legato Pedal Keyswitch	4TB Sus DXF Leg pdl KS	P G **S**

4 Trumpets		
Crescendo	4TP Crec	**P G** S
Forte piano	4TP Forte Piano	**P G** S
Forte piano, crescendo on release	4TP Fp & Rel-Crec	**P G** S
Keyswitch C0–A#0	4TP keyswitch c0-a#0	**P G** S
Keyswitch C0–D#0	4TP keyswitch c0-D#0	**P G** S
Sforzando	4TP Sfz	**P G** S
Fast slur	4TP Slr Fast	**P G** S

The *4 Trumpets* table continues on the next page.

4 Trumpets (continued)		
Sustain, DXF	4TP Sus DXF	**P G S**
Slur	4TP Slr	**P G** S
Staccato	4TP Stac	**P G S**
Sustain, MW → volume, velocity → accent	4TP Sus ACC VEL DXF	**P G** S
Sustain, MW → accent	4TP Sus accent Mod	**P G S**
Sustain legato, DXF	4TP Sus DXF Leg	**P G** S
Sustain, cross fade to accented	4TP Sus X-Fade Accent	**P G** S
Ssstain, MW cross fade	4TP Sus X-Fade	**P G** S
Sustain	4TP Sus	**P G S**
Silver Master Keyswitch	4TP Master KS	P G **S**
Silver Legato Pedal Keyswitch	4TP Sus DXF Leg pdl KS	P G **S**

6 French Horns		
Emotional legato, with DXF	6FH Emotn DXF Leg	**P G** S
Keyswitch FX C0–D#0	6FH Keysw FX C0-D#0	**P G** S
Keyswitch Sustain C0–D#0	6fh KeySw Sus C0-D#0	**P G** S
Keyswitch C0–A0	6fh KeySwitch C0-A0	**P G** S
Keyswitch C0–D#0	6fh KeySwitch C0-D#0	**P G** S
Keyswitch C0–E0	6fh KeySwitch C0-E0	**P G** S
Portato	6FH Port	**P G** S
Long glissando rips	6FH Rips L	**P G** S
Short glissando rips	6FH Rips S	**P G** S
Alternate glissando rips	6FH Rips x	**P G** S
Sforzando	6FH Sfz	**P G** S
Shakes	6FH Shake	**P G** S
Slide	6FH Slide	**P G** S
Staccato	6FH Stac	**P G S**
Stops with fast attacks	6FH Stop fast	**P** G S
Stops	6FH Stop	**P** G S
Sustain smooth, 4 layers	6FH Sus 4 Lay Smooth	**P G S**
Sustain, 4 layers	6FH Sus 4 lay	**P G** S
Sustain, 5 layers	6FH Sus 5 lay	**P G** S
Sustain, MW → volume, velocity → accent top dynamic layer is very bright	6FH Sus ACC VEL DXF 2	**P G S**
Sustain, MW → volume, velocity → accent	6FH Sus ACC VEL DXF	**P G** S
Sustain, attack accent	6FH Sus Accent	**P G** S

The *6 French Horns* table continues on the next page.

6 French Horns (continued)		
Medium sustain, dynamic attack, playful pirate program	6FH Sus Adventure	**P G** S
Bright sustain	6FH Sus Bright	**P G** S
Sustain, MW → volume and cross fade, top dynamic layer is very bright	6FH Sus DXF 2	**P G** S
Sustain, MW → volume and cross fade	6FH Sus DXF	**P G** S
Forte piano, MW → cross fade	6FH Sus f-p X-Fade	**P G** S
Sustain, fast attack, 4 layers	6FH Sus fast 4 lay	**P G** S
Sustain, fast attack, 5 layers	6FH Sus fast 5 lay	**P G** S
Sustain, fast attack. mellow	6FH Sus fast mellow	**P G** S
Sustain, fast attack, MW → cross fade	6FH Sus fast X-Fade	**P G** S
Sustain, forte piano	6FH Sus Forte Piano	**P G** S
Sustain smooth, fast attack, 4 layers	6FH Sus fst 4 ly smth	**P G** S
Sustain mellow legato	6FH Sus Mellow Leg	**P G** S
Sustain mellow	6FH Sus Mellow	**P G S**
Sustain, MW → cross fade to portato	6FH Sus x-fade + Port	**P G** S
Sustain, MW → cross fade to staccato	6FH Sus X-Fade + Stac	**P G** S
Sustain, MW → cross fade	6FH Sus X-Fade	**P G** S
Sustain, legato, DXF	6FH Sus XFD DYN LEG	**P G** S
3-way fast slide to sustain	6FH Sus-Slide	**P G** S
Silver Master Keyswitch	6FH Master KS	P G **S**
Silver Legato Pedal Keyswitch	6FH Sus DXF Leg pdl KS	P G **S**
Silver Legato Pedal Keyswitch 2	6FH Sus DXF 2 Leg pdl KS	P G **S**

Brass Ensemble		
Brass Ensemble	BRass ENS 1	**P** G S

French Horn		
Keyswitch C0–D0	SFH KeySwitch C0-D0	**P** **G** S
Keyswitch C0–E0	SFH KeySwitch C0-E0	**P** **G** S
Portato	SFH Port	**P** **G** S
Sforzando crescendo	SFH Sfz Crec	**P** **G** S
Staccato	SFH Stac	**P** **G** **S**
Sustain, MW → attack accent	SFH Sus Accent Mod	**P** **G** S
Sustain, attack accent	SFH Sus Accent	**P** **G** **S**
Sustain, DXF of attack accent	SFH Sus DXF ACC	**P** **G** S
Sustain, DFX	SFH Sus DXF	**P** **G** S
Sustain	SFH Sus	**P** **G** **S**
Silver Master Keyswitch	SFH Master KS	P G **S**
Silver Legato Pedal Keyswitch	SFH Sus DXF Leg pdl KS	P G **S**

Tenor and Bass Trombone		
Low octave sforzando (bass trombone)	STB bass SFZ CREC	**P** G S
Keyswitch C0–D0	STB KeySwitch C0-D0	**P** **G** S
Fast Staccato	STB Stac Fast	**P** **G** S
Staccato	STB Stac	**P** **G** **S**
Sustain, MW → attack accent	STB Sus Accent Mod	**P** **G** S
Sustain, DXF of attack accent	STB Sus DXF ACC	**P** **G** S
Sustain, DFX	STB Sus DXF	**P** **G** S
Sustain	STB Sus	**P** **G** **S**
Silver Master Keyswitch	STB Master KS	P G **S**
Silver Legato Pedal Keyswitch	STB Sus DXF Leg pdl KS	P G **S**

Trumpet		
Very dynamic, expressive non-vibrato sustain	STP Exp PPFF	**P** **G** S
Expressive sustain	STP Exp	**P** **G** **S**
Keyswitch C0–D0	STP KeySwitCH C0-D0	**P** **G** S
Keyswitch C0–G#0	STP KeySwitCH C0-G#0	**P** **G** S
Non-vibrato sustain, moderate accent, MW → volume & cross fade to vibrato	STP Nv VB DXF ACC Mid	**P** **G** S
Non-vibrato sustain, soft accent, MW → volume & cross fade to vibrato	STP Nv Vb DXF ACC Sof	**P** **G** S
Portato, expresive crescendo on release	STP Port rel exp	**P** G S
Portato	STP Port	**P** **G** S
Sforzando, crescendo	STP Sfz Crec	**P** **G** S
Slur	STP Slur	**P** **G** S
Staccato, double-tongue	STP Stac Dbl-Tng	**P** G S
Staccato	STP Stac	**P** **G** **S**
Sustain, MW → double-tongue attk. accent	STP Sus acc DT Mod	**P** G S
Sustain, MW → attack accent	STP Sus Accent Mod	**P** **G** S
Sustain, attack accent, DXF	STP SUS DXF ACC	**P** **G** S
Sustain, DXF	STP SUS DXF	**P** **G** S
Vibrato sustain	STP Sus Vib	**P** **G** **S**
Sustain	STP Sus	**P** **G** **S**
Vibrato sustain, attack accent, DXF	STP Vib DXF ACC	**P** **G** S
Vibrato sustain, DXF	STP Vib DXF	**P** **G** S
Silver Master Keyswitch	STP Master KS	P G **S**
Silver Legato Pedal Keyswitch	STP Sus DXF Leg pdl KS	P G **S**
Silver Legato Pedal Keyswitch with vibrato	STP Sus Vib DXF Leg pdl KS	P G **S**

Tuba		
Keyswitch C4–D#4	STU KeySwitch C4-D#4	**P** G S
Keyswitch C4–D4	STU KeySwitch C4-D4	**P** **G** S
Sforzando	Stu sfz	**P** G S
Staccato	STU Stac*	**P** **G** S
Sustain, MW → attack accent	STU Sus Accent Mod	**P** **G** S
Sustain, attack accent, DXF	STU Sus DXF ACC	**P** **G** S
Sustain, DXF	STU Sus DXF	**P** **G** S
Sustain	STU Sus	**P** **G** S
Silver Master Keyswitch	STU Master KS	P G **S**
Silver Legato Pedal Keyswitch	STU Sus DXF Leg pdl KS	P G **S**

Orchestral Percussion		
12" Cymbal pair	12 Band Cymbal	**P G** S
12" Suspended cymbal	12 Cymbal	**P G** S
16" Cymbal pair	16 German cymbal	**P G S**
18" Suspended cymbal	18 Cymbal	**P G** S
18" Cymbal pair	18 German Cymbal	**P G** S
18" Cymbal pair	18 Viennese Cymbal	**P** G **S**
19" Cymbal pair	19 French Cymbal	**P G** S
20" Suspended cymbal	20 Cymbal	**P G S**
20" Cymbal pair	20 French Cymbal	**P G** S
21" Cymbal pair	21 French Cymbal	**P** G S
22" Suspended cymbal	22 Cymbal	**P G** S
23" Gong	23 Gong	**P G S**
28" Gong	28 Gong	**P G S**
3 snares (large medium small; long rolls)	3 Snares DXF Rolls	**P G** S
3 snares (large medium small; hits & rolls)	3 Snares	**P G** S
48” Gong	48 Gong	**P** G S
5 Toms (left and right hits)	5 Toms	**P** G S
60” Gong	60 Gong	**P G** S
All cymbal sizes in one articulation file	All Cymbals	**P** G S
Lower-pitched anvils and railroad tracks	Anvil Low	**P G** S
Higher-pitched anvils and railroad tracks	Anvil	**P G S**
Bass drum, concert	Bass Drum Concert	**P** G **S**
Bass drum, Wagner	Bass Drum Wagner*	**P G** S
Castanets	Castanets	**P G** S
Crotales	Crotales	**P G S**
Field drums	Field Ens	**P** G S
Field, funeral, and tenor drums	Field Funeral Tenor	**P** G S
Mellow glockenspiel	Glock Mellow	**P G S**
Glockenspiel	Glock	**P G S**
All gong sizes in one articulation file	Gongs	**P** G S
Orchestral chimes	Orch chimes	**P G S**
Large snare drums	Snare Ens Large	**P G** S
Small snare drums	Snare Ens Small	**P G** S
Tambourine (hits and shakes)	Tambourine	**P G** S

The *Orchestral Percussion* table continues on the next page.

Orchestral Percussion (continued)		
Timpani, long crescendo rolls	Timp Crec L	P G S
Timpani, short crescendo rolls	Timp Crec S	P G S
Timpani, hits and long crescendo rolls in one articulation file	Timp Hits Crec L	P G S
Timpani, hits and short crescendo rolls in one articulation file	Timp Hits Crec S	P G S
Timpani hits	Timp Hits	P G S
Timpani rolls, DXF	Timp Roll DXF Mod	P G S
Timpani rolls, crescendo on release	Timp Roll Rel Crec	P G S
Timpani rolls	Timp Roll	P G S
Timpani, soft hits	Timp Soft Hits	P G S
Triangle, hits	Triangle	P G S
Bells and bell tree	Various Metals	P G S
Castanets, wood blocks, whistles, tambourine.etc.	Various Perc	P G S
Vibraphone	Vibes	P G S
Xylophone	Xylophone	P G S
Crotales, MW → hand muffling	Crotales HandMuf Mod	P G S
Clockenspiel, MW → hand muffling	Glock HandMuf Mod	P G S
Orchestral chimes, MW → hand muffling	Orch chimes HMuf Mod	P G S
Timpani hits, MW → hand muffling	Timp Hits HandMuf Mod	P G S
Vibraphone (accented?), MW → hand muffling	Vibes Acc HandMuf Mod	P G S
Vibraphone, MW → hand muffling	Vibes HandMuf Mod	P G S

CHAPTER 5
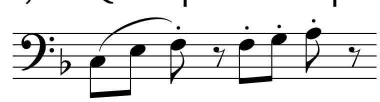
Articulations by Type

The EWQLSO library includes a great number articulations for most instruments in the string, brass, and woodwind sections. Some of the differences among these sounds can be subtle. And some terms may not be familiar to all users. Let's start by comparing—in words, at least—some of the articulations. The descriptions here are specific to how EWQLSO uses the terms.

Some articulations are available for only a select group of instruments; the tables in this chapter specify which instruments include each articulation. Those articulations labeled with an asterist (*) below are included in the tables later in this chapter.

Duration and Attachment

- **Legato** describes a note that not only continues to the start of the next note, but also makes a smooth transition to it. In the samples, these notes are cut out of phrases to achieve the instrumentalist's natural flow preparing to start the next note. But be aware that achieving a realistic legato line is not as easy a stringing together notes from a Legato patch; the effective use of expression, velocity and selective attack accent can sometimes be needed to make the Legato samples come alive.
- **Sustain** refers to a note which is held for as long as needed, but does not prepare for a following note. Many of these samples are looped, meaning that the sound will continue indefinitely until the Note-Off event. (Non-looped samples decay and end at some fixed time if no Note-Off is reached first.) You may want to make the last note of a Legato phrase Sustain instead, whenever it sounds as if that note is headed to a next note that never appears.
- **Slur***, at least in this library, refers to a note that includes a short half-step rise at the beginning of the sample. This articulation only exists in string instruments that can move continuously from one note to the next by sliding a finger along the string, and in brass instruments where a "bend" can be effected with a change in embouchure. This articulation, when placed in the middle of a phrase on a note that the instrumentalist might reach using such a half-step slide can add realism to the phrase. It can also be used to create an upward chromatic scale that moves not in discreet jumps, but quickly passes through the intervening sounds, as well. Of course, you may find additional, novel uses for this articulation.
- **Slide** refers to a slide into a sustain.
- **Portato*** notes are held as long as needed, but then leave a small but noticeable gap between notes.
- **Staccato*** refers to very short notes, usually with lots of space between notes. It is notated with a dot above—or below—the note. In some cases in the string section, EWQLSO provides separate samples for staccato played with an up-bow and down-bow. Because it's usual for string players to alternate between up-bow (V) and down-bow (⊓) in staccato passages, those articulations with "Up Down" in the name automatically alternate between the sam-



ples for you. (For string players, there are other ways to achieve short notes. See those special articulations later in this section.)

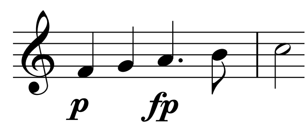
Vibrato

Sustained notes often come in two versions:

- **Vibrato** refers to the slight wavering (literally, vibrating) in the pitch of a note that produces a pleasing sound similar to the natural fluctuation of the human voice around a central pitch. For sustained note that do not specify vibrato or non-vibrato, you may assume the samples include vibrato. In many articulations, the vibrato characteristically starts after a slight delay, allowing the samples also to be used in faster passages in which vibrato would not normally be applied.
- **Non-vibrato** describes a note which holds tightly to its main pitch without wavering. For long-held notes it can sound cold, lacking in expression. But it is sometimes preferred for certain styles of playing.

Stress and Dynamics

- **Sforzando*** describes a note that is played with extra force, causing it to be not only louder but also more stressed than other notes near it. This term usually applies to one note—or just a few notes—that needs to stand out from others near them. It is tiring to the ears, and therefore uncommon, to hear many Sforzando notes in a row.
- **Attack accent** is not an articulation by itself, but is a component of many articulations in EWQLSO. The amount of accent is often controlled by the Mod Wheel, and less often by the velocity of the Note-On event. This term refers to a brief stress at the beginning of a note. It is similar to, but not the same as, the following term.
- **Forte piano*** describes an articulation whose notes start loud (forte) and quickly drop to a softer level (piano) for the sustained part.



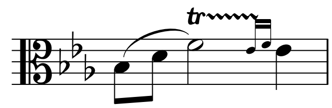
- **Crescendo*** refers to a continuous rise in loudness. Articulations with this label record the live instrument in a crescendo on a single note, so the effect is somewhat smoother and more natural than a cross fade between layers in a DXF.
- **Crescendo on release*** is an attribute of several articulations in which the release trail, instead of capturing the natural release and the reverb of the hall, actually supplies an after-the-fact, brief crescendo (followed by *its* release and reverb). Be careful not to hold the main note so long that it starts its decay, or else the sudden resumption of the note at the start of the release trail will sound unnatural (unless that's what you want, of course).
- **Diminuendo*** is the opposite of crescendo, a continuous decrease in loudness.

Ornamentation and Phrases

- **Grace notes*** are single short notes that immediately precede the main note. In EWQLSO, all provided grace notes rise a half step to the main note and the accent is on the main note, not the grace note.



- **Glissando**,* in general usage, has multiple meanings. In this library, it refers to a short upward run that precedes the main note. It might, for example, be used as a pickup to a melodic phrase. Because of its speed, using such a built-in phrase sounds more natural than writing it out as separate notes.
- **Rips*** describe the brass section eqivalent of the Glissando above, a short upward run preceding the main note.
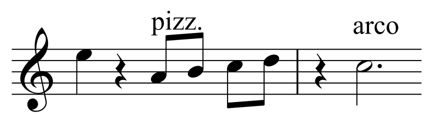


- **Trill*** refers to the rapid alternation of two notes, either a half step or whole step apart.
- **Fall*** refers, in EWQLSO, to a fast, downward chromatic scale starting at the given note and ending an octave below.

Technique

- **Flutter tongue*** refers to the rapid movement of the tongue while blowing into the instrument's mouthpiece. The technique is sometimes compared to the rolled R of some southern European languages.
- **Shake** describes a brief, coarse, trill-like sound characteristic of the French Horn.
- **Sordino** refers to a sound played with a mute in place. Each instrument has a characteristic muted sound, sometime considerably different from the same instrument unmuted.

String-specific Articulations



- **Pizzicato*** is the name given to the sound of strings plucked with the fingers instead of bowed. It creates a very short sound that can cut through even a dense orchestration.
- **Marcato*** refers to notes that are played emphatically with the bow and that are usually slightly separated from their neighbors.
- **Martelé*** is a term that describes a playing style in which the bow pushes heavily on the string and the sound stops briefly between notes, achieving a strong accent at the start of each note. It is usual for the bow to reverse direction at the start of each new note, hence the "Up Down" in the name of most Martelé articulation files. In some cases, Marcato is heard at top velocities.
- **Spiccato*** refers to a style of string playing in which the bow bounces off the string with each note. In some cases, Spiccato is only heard at top velocities. Also look for examples of 3-way round-robins in which spiccato appears on every third note to give variety to a run of staccato notes.
- **Tremolo*** describes a rapid repetition of the same note produced by alternating up and down strokes of the bow without having the bow leave the string. This tremulous effect often accompanies mysterious or scary scenes in movies.

Expression

Some of the terms used in EWQLSO articulations are more subjective. Because they are already descriptive, they are listed here without comment as to their meaning.

- Expressive
- Emotion
- Butter legato
- Lyrical

Articulation Tables

What follows is a series of tables, one per articulation type. These tables have several uses. First, if you're looking to change from one instrument to another, and the current one includes a specific articulation—a grace note, for example—you can use these tables to find what other instruments can be used. Second, when building a layered sound from several different instrument, perhaps a mixture of strings and brass, it's nice to know what sonic effects they share. Third, you can more easily see breaks in the symmetry among the instruments; some articulations are available in some but not all members of a family (strings, reeds, brass, etc.). Knowing these differences in advance can avoid surprises in the middle of a project. You may think of other uses as well.

Hint: when a specific articulation is included for 18 Violins, but not for 11 Violins (or vice versa), it is often possible to mock up the missing patch by using the one that *is* available and adjusting the panning to fool the ear. This works best in a large mix when the slight change in timbre will not be as noticeable. Of course, the trick can work in other instrument families, as well.

Articulations with many, many examples, such as Sustain and Vibrato, are not listed here. And note that the exact order is often dictated by the desire to fit tables nicely into pages without a lot of white space and minimizing tables that break across two pages. When working on-screen, use the bookmarks at the left to find the table you need.

The tables start on the next page.

Slur			
18 Violins	18V Slur fast		P G S
18 Violins	18V Slur medium		P G S
18 Violins	18V Slur slow		P G S
4 Trumpets	4TP Slur		P G S
4 Trumpets	4TP Slur fast		P G S
4 Trumpets	4TP Keyswitch C0–A0	G#0=slow, A0=fast	P G S
Trumpet	STP Slur		P G S
Trumpet	STP Keyswitch C0–G#0	F#0=fast, G0=slur	P G S

Portato			
10 Cellos	VCS Portato short		P G S
10 Cellos	VCS Portato		P G S
9 Double Basses	CBS Portato		P G S
Bass Clarinet	BCL Portato		P G S
Bassoon	BSN Portato		P G S
Clarinet	SCL Portato		P G S
Contrabassoon	CTB Portato ***f***		P G S
3 Wagner Tubas	3WT Sustain portato†		P G S
4 Trombones	4TB Portato, accented		P G S
4 Trombones	4TB Portato, cross fade to sustain		P G S
4 Trombones	4TB Portato		P G S
4 Trombones	4TB Keyswitch A-1–D#0	D#0=portato	P G S
6 French Horns	6FH Keyswitch C0–D#0	D#0=portato	P G S
6 French Horns	6FH Portato		P G S
French Horn	SFH Keyswitch C0–E0	E0=portato	P G S
French Horn	SFH Portato		P G S
Trumpet	STP Keyswitch C0–G#0	D#0=portato	P G S
Trumpet	STP Portato release expressive		P G S
Trumpet	STP Portato		P G S

The instrument marked with a dagger(†) has a heavily accented portato only at top velocities.

Staccato			
10 Cellos	VCS Quick up down		P G S
10 Violas	VAS Short martele up dn marcato short		P G S
10 Violas	VAS Short martele up down		P G S
11 Violins	11V Quick up down marcato		P G S
11 Violins	11V Quick up down spiccato		P G S
11 Violins	11V Quick up down		P G S
11 Violins	11V Short 3-way round robin		P G S
11 Violins	11V Short 3-way spiccato round robin		P G S
18 Violins	18V Keyswitch fast C0-A#0	G0=up G#0=down	P G S
18 Violins	18V Quick up down marcato short		P G S
18 Violins	18V Quick up down marcato up down		P G S
18 Violins	18V Quick up down		P G S
18 Violins	18V Short 3-way round robin		P G S
9 Double Basses	CBS Quick up down mod wheel slaps		P G S
9 Double Basses	CBS Quick up down		P G S
3 Clarinets	3CL Keyswitch C0–F0	C#0=staccato	P G S
3 Clarinets	3CL Staccato		P G S
3 Flutes	3FL Keyswitch trill C0–G0	C#0=staccato	P G S
3 Flutes	3FL Keyswitch C0–F0	C#0=staccato	P G S
3 Flutes	3FL Staccato		P G S
3 Oboes	3OB Keyswitch trill C0–F0	C#0=staccato	P G S
3 Oboes	3OB Keyswitch C0–D0	C#0=staccato	P G S
3 Oboes	3OB Keyswitch C0–F0	C#0=staccato	P G S
3 Oboes	3OB Staccato		P G S
Alto Flute	AFL Keyswitch C0–E0	C#0=staccato	P G S
Alto Flute	AFL Staccato		P G S
Bass Clarinet	BCL Keyswitch C0–F#0	D#0=staccato	P G S
Bass Clarinet	BCL Staccato		P G S
Bassoon	BSN Keyswitch C0–D0	C#0=staccato	P G S
Bassoon	BSN Keyswitch C0–G0	C#0=staccato	P G S
Bassoon	BSN Staccato		P G S
Clarinet	SCL Keyswitch C0–D0	C#0=staccato	P G S
Clarinet	SCL Keyswitch C0–F#0	C#0=staccato	P G S
Clarinet	SCL Staccato		P G S
Concert Flute	SFL Keyswitch C0–D0	C#0=staccato	P G S
Concert Flute	SFL Keyswitch C0–F#0	C#0=staccato	P G S

The *Staccato* table is continued on the next page.

Staccato (continued)			
Concert Flute	SFL Staccato		P G S
Contrabassoon	CTB Keyswitch C3–D3	C#3=staccato	P G S
Contrabassoon	CTB Keyswitch C3–F#3	C#3=staccato	P G S
Contrabassoon	CTB Staccato		P G S
English Horn	EHN Keyswitch C0–D0	C#0=staccato	P G S
English Horn	EHN Keyswitch C0–F#0	C#0=staccato	P G S
English Horn	EHN Staccato		P G S
Oboe	SOB Keyswitch C0–D0	C#0=staccato	P G S
Oboe	SOB Keyswitch C0–G0	C#0=staccato	P G S
Oboe	SOB Keyswitch trill C0–F0	C#0=staccato	P G S
Oboe	SOB Staccato		P G S
Piccolo Flute	PFL Keyswitch C0–E0	C#0=staccato	P G S
Piccolo Flute	PFL Keyswitch Trill C0–E0	C#0=staccato	P G S
Piccolo Flute	PFL Staccato		P G S
4 Trombones	4TB Keyswitch A-1–B-1	A#-1=staccato	P G S
4 Trombones	4TB Keyswitch A-1–D#0	A#-1=staccato	P G S
4 Trombones	4TB Staccato fast		P G S
4 Trombones	4TB Staccato		P G S
4 Trumpets	4TP Keyswitch C0–A0	C#0=staccato	P G S
4 Trumpets	4TP Keyswitch C0–D0	C#0=staccato	P G S
4 Trumpets	4TP Staccato		P G S
6 French Horns	6FH Keyswitch C0–A0	C#0=staccato	P G S
6 French Horns	6FH Keyswitch C0–E0	C#0=staccato	P G S
6 French Horns	6FH Staccato		P G S
French Horn	SFH Keyswitch C0–D0	C#0=staccato	P G S
French Horn	SFH Keyswitch C0–E0	C#0=staccato	P G S
French Horn	SFH Staccato		P G S
Trombone	STB Keyswitch C0–D0	C#0=staccato	P G S
Trombone	STB Staccato		P G S
Trumpet	STP Keyswitch C0–D0	C0#=staccato	P G S
Trumpet	STP Keyswitch C0–G#0	C0#=staccato	P G S
Trumpet	STP Staccato		P G S
Tuba	STU Keyswitch C4–D#4	C#4=staccato	P G S
Tuba	STU Keyswitch C4–D4	C#4=staccato	P G S
Tuba	STU Staccato		P G S

All Silver Master keyswitch files contain either Staccato or "Mock Staccato" articulations. See the Silver keyswitch diagrams in Chapter 6 for more details.

Sforzando

9 Double Basses	CBS Sforzando		**P** G S
9 Double Basses	CBS Keyswitch C3–F#3	F3=sforzando	**P G** S
Oboe	SOB Sforzando		**P G** S
Oboe	SOB Keyswitch C0–G0	D#0=sforzando	**P G** S
4 Trumpets	4TP Sforzando		**P G** S
4 Trumpets	4TP Keyswitch C0–A0	E0=sforzando	**P G** S
6 French Horns	6FH Keyswitch C0–A0	A0=long sforzando	**P G** S
6 French Horns	6FH Sforzando		**P G** S
French Horn	SFH Keyswitch C0–E0	D#0=sforzando	**P G** S
French Horn	SFH Sforzando crescendo		**P G** S
Trumpet	STP Keyswitch C0–G#0	F0=sforzando	**P G** S
Trumpet	STP Sforzando crescendo		**P G** S
Tuba	STU Keyswitch C4–D#4	D#4=sforzando	**P** G S
Tuba	STU Sforzando		**P** G S

Forte-piano

9 Double Basses	CBS Forte piano		**P G S**
9 Double Basses	CBS Keyswitch C3–F#3	D3=forte piano	**P G** S
9 Double Basses	CBS Master Keyswitch	F-1=forte piano	P G **S**
4 Trombones	4TB Forte piano		**P G** S
4 Trombones	4TB Forte piano release crescendo		**P G** S
4 Trombones	4TB KeySwitch A-1–D#0	C#0=forte piano	**P G** S
4 Trumpets	4TP Forte piano		**P G** S
4 Trumpets	4TP Forte piano, release crescendo		**P G** S
4 Trumpets	4TP Keyswitch C0–A0	F0=fp F#0=fp, cresc rel	**P G** S
6 French Horns	6FH Keyswitch C0–A0	G0=fp	**P G** S
6 French Horns	6FH Forte piano cross fade		**P G** S
6 French Horns	6FH Sustain forte piano		**P G** S

Crescendo & Crescendo on Release			
10 Cellos	VCS Crescendo		**P** G S
18 Violins	18V Cluster & air (effects)		**P** **G** S
9 Double Basses	CBS Crescendo		**P** G S
9 Double Basses	CBS FX (cluster & crescendo)		**P** **G** S
Solo Violin	SVL Crescendo		**P** G S
Solo Violin	SVL Expressive crescendo		**P** G S
Solo Violin	SVL Keyswitch C0–A0	A0=sus, cresc release	**P** G S
Solo Violin	SVL Sustain vibrato crescendo release		**P** G S
Bass Clarinet	BCL Expressive fast (Swell)		**P** **G** S
Bass Clarinet	BCL Keyswitch C0–F#0	F0=expressive cresc	**P** **G** S
Bassoon	BSN Expressive Long crescendo		**P** **G** S
Bassoon	BSN Expressive short (crescendo)		**P** **G** S
Contrabassoon	CTB Expressive short crescendo		**P** G S
French Horn	SFH Sforzando crescendo		**P** **G** S
4 Trombones	4TB Crescendo long		**P** G S
4 Trombones	4TB Crescendo medium		**P** G S
4 Trombones	4TB Crescendo short		**P** G S
4 Trombones	4TB Forte-piano release crescendo		**P** **G** S
4 Trumpets	4TP Crescendo		**P** **G** S
4 Trumpets	4TP Forte-piano release crescendo		**P** **G** S
4 Trumpets	4TP Keyswitch C0–A0	F#0=f-p, cresc release	**P** **G** S
Trumpet	STP Keyswitch C0–G#0	G#0=crescendo	**P** **G** S

Note that there are patches within 3 instrument groups where the Mod Wheel controls volume, so you can create your own crescendo and diminuendo effects: 4 Trumpets, 4 Trombones, and 6 French Horns.

Diminuendo			
11 Violins	11V Expressive diminuendo		**P** G S
3 Flutes	3FL Expressive diminuendo		**P** **G** S

Grace Notes			
3 Flutes	3FL Grace notes		**P** G S
3 Oboes	3OB Grace notes		**P** G S
Concert Flute	SFL Grace notes		**P** **G** S
Contrabassoon	CTB Grace notes		**P** G S
English Horn	EHN Grace notes		**P** G S
Oboe	SOB Grace notes		**P** **G** S

Glissando			
11 Violins	11V Glissando long		**P** G S
11 Violins	11V Glissando short		**P** G S
3 Flutes	3FL Glissando long		**P** G S
3 Flutes	3FL Glissando short		**P** G S
Bass Clarinet	3BC Glissando		**P** G S
Bassoon	BSN Glissando		**P** G S
Contrabassoon	CTB Glissando		**P** G S
English Horn	EHN Glissando		**P** G S
Oboe	SOB Glissando		**P G** S
Piccolo Flute	PFL Glissando		**P** G S

Rips			
3 Wagner Tuben	3WT Glissando rips		**P** G S
6 French Horns	6FH Glissando rips long		**P G** S
6 French Horns	6FH Glissando rips short		**P G** S
6 French Horns	6FH Glissando rips short, alternate		**P G** S
6 French Horns	6FH FX Keyswitch C0–D#0	C0=rips short C#0=rips shrt, altern. D0=rips long	**P G** S

Trills: Half-step & Whole-step			
10 Cellos	VCS Trill half & VCS Trill whole		**P G S**
10 Cellos	VCS Keyswitch trill C0–F#0	F0=half, F#=whole	**P G** S
10 Cellos	VCS Master Keyswitch	F#0=half, G=whole	P G **S**
11 Violins	11V Trill half & 11V Trill whole		**P G S**
11 Violins	11V Keyswitch trill C0–E0	D#0=half, E0=whole	**P G** S
11 Violins	11V Master Keyswitch	F#0=half, G=whole	P G **S**
3 Flutes	3FL Trill half & 11V Trill whole		**P G S**
3 Flutes	3FL Keyswitch trill C0–G0	F0=half, F#0=whole	**P G** S
3 Flutes	3FL Master Keyswitch	F#0=half, G=whole	P G **S**
3 Oboes	3OB Trill half & 3OB Trill whole		**P** G S
3 Oboes	3OB Keyswitch trill C0–F0	D#0=half, E0=whole	**P** G S
Oboe	SOB Trill half & SOB Trill whole		**P G S**
Oboe	SOB Keyswitch trill C0–F0	D#0=half, E0=whole	**P G** S
Oboe	SOB Master Keyswitch	F#0=half, G=whole	P G **S**
Piccolo Flute	PFL Trill half & PFL Trill whole		**P G** S
Piccolo Flute	PFL Keyswitch trill C0–E0	D#0=half, E0=whole	**P G** S

Falls			
English Horn	EHN Falls		P G S
Oboe	SOB Falls		P G S

Flutter Tongue			
Concert Flute	SFL Flutter Mod Wheel		P G S
4 Trombones	4TB Flutter tongue		P G S

Pizzicato			
10 Cellos	VCS Pizzicato		P G S
18 Violins	18V Pizzicato		P G S
9 Double Basses	CBS Pizzicato mod-wheel slaps		P G S
9 Double Basses	CBS Pizzicato		P G S
Large String Sect	60 Piece string section pizzicato		P G S

Marcato			
10 Violas	VAS Marcato long		P G S
10 Violas	VAS Marcato short		P G S
10 Violas	VAS Martelé up down marcato†		P G S
10 Violas	VAS Martelé up down marcato short†		P G S
11 Violins	11V Marcato short		P G S
11 Violins	11V Marcato		P G S
11 Violins	11V Martelé up down marcato†		P G S
11 Violins	11V Quick up down marcato†		P G S
18 Violins	18V Keyswitch fast C0–A#0	F#0=short marcato	P G S
18 Violins	18V Marcato long		P G S
18 Violins	18V Marcato medium short		P G S
18 Violins	18V Marcato short		P G S
18 Violins	18V Martelé up down marcato medium†		P G S
18 Violins	18V Quick up down marcato short†		P G S
18 Violins	18V Quick up down marcato up down†		P G S
Solo Violin	SVL Marcato vibrato		P G S
Solo Cello	SVC Marcato		P G S
Solo Cello	SVC Martelé up down marcato†		P G S

In certain cases the Marcato articulation is heard only at the highest velocities within an instrument's dynamic range, with either the Martelé or Staccato articulation at lower velocities. Those cases are marked with a dagger(†) above.

Martelé			
10 Cellos	VCS Martelé up down		P G S
10 Violas	VAS Martelé up down marcato		P G S
10 Violas	VAS Martelé up down		P G S
11 Violins	11V Martelé up down marcato		P G S
11 Violins	11V Martelé up down		P G S
18 Violins	18V Keyswitch fast C0–A#0	A0=up A#0=down	P G S
18 Violins	18V Martelé up down marcato medium		P G S
18 Violins	18V Martelé up down marcato short		P G S
18 Violins	18V Martelé up down		P G S
9 Double Basses	CBS Martelé up down		P G S
Solo Violin	SVL Martelé up down		P G S
Solo Cello	SVC Martelé up down		P G S

Spiccato			
11 Violins	11V Martelé up down spiccato†		P G S
11 Violins	11V Quick up down spiccato†		P G S
11 Violins	11V Short spiccato 3-way round robin		P G S
11 Violins	11V Spiccato		P G S
11 Violins	11V Master Keyswitch	F0=spiccato	P G S

The instruments marked with a dagger(†) use spiccato only at top velocities.

Tremolo			
10 Cellos	VCS Tremolo		P G S
10 Cellos	VCS Master KS	F0=tremolo	P G S
18 Violins	18V Tremolo legato		P G S
18 Violins	18V Tremolo		P G S
18 Violins	18V Master Keyswitch	F0=tremolo	P G S
9 Double Basses	CBS Tremolo		P G S

CHAPTER 6

Keyswitch Diagrams

Platinum and Gold Keyswitches

What follows is an array of diagrams that show what notes generate what articulations in keyswitched articulation files. They are arranged in approximately the same order as in the printed manual. See a further explanation of these diagrams in the Overview near the beginning of this document.

When there is Mod Wheel control of the samples on any keyswitched articulation, that is indicated in the rightmost column. When that column contains the words “Cross fade,” it means that the Mod Wheel changes the timbre in some way. [If I receive a more specific statement of how the timbre is changed, I’ll include that information. For now, listen for yourself to decide what works in your orchestrations.]

Keyswitches that are not currently available at the Gold level include the label “Platinum only” in red. Keyswitches for Silver are in a separate section at the end of this chapter.

String Sections

10 Cellos
VCS Keysw Sordino C0-D0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Sordino legato	>
C#	> Sordino sustain	>
C (C0)	> Sordino expressive	>

10 Cellos
VCS Keyswitch C0-E0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	> Legato	>
D#	> Vibrato expressive legato	>
D	> Big sustain	>
C#	> Vibrato expressive, fast attack	>
C (C0)	> Vibrato sustain	>

10 Cellos
VCS Keyswitch C0-G0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	> Expressive legato	>
F#	> Vibrato legato	>
F	> Big sustain	>
E	> Non-vibrato sustain	> Cross fade to vibrato sustain
D#	> Lyrical sustain	>
D	> Vibrato expressive, slow attack	>
C#	> Vibrato expressive, fast attack	>
C (C0)	> Vibrato sustain	>

10 Cellos
VCS Keyswitch Trill C0-F#0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	> Whole-step trill	>
F	> Half-step trill	>
E	> Legato	>
D#	> Vibrato expressive legato	>
D	> Big sustain	>
C#	> Vibtrato expressive, fast attack	>
C (C0)	> Vibrato sustain	>

10 Violas
VAS Keyswitch C0-F0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	> Non-vibrato	> Cross fade to vibrato
E	> Expressive legato	> Attack accent
D#	> Expressive legato	>
D	> Vibrato expressive, slow attack	>
C#	> Vibrato expressive, fast attack	>
C (C0)	> Vibrato sustain	>

11 Second Violins
11V Keyswitch Trill C0-E0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	> Whole-step trill	>
D#	> Half-step trill	>
D	> Vibrato legato	>
C#	> Lyrical sustain B	>
C (C0)	> Vibrato sustain	>

11 Second Violins
11V Keyswitch C0-D0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Vibrato legato	>
C#	> Lyrical sustain B	>
C (C0)	> Vibrato sustain	>

18 First Violins
18V Keyswitch C0-A0

C0

	Platinum only	Mod Wheel controls:
A#	>	>
A	> Expressive legato	>
G#	> Legato	>
G	> Slurred sustain, fast attack	>
F#	> Slurred sustain	>
F	> Non-vibrato	> Cross fade to vibrato expressive
E	> Vibrato expressive, slow attack	>
D#	> Lyrical sustain, slow attack	>
D	> Lyrical sustain, fast attack	>
C#	> Vibrato expressive, fast attack	>
C	> Vibrato sustain	>

18 First Violins
18V Keyswitch C0-D#0

C0

		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	> Expressive legato	>
D	> Legato	>
C#	> Vibrato expressive, fast attack	>
C	> Vibrato sustain	>

18 First Violins
18V Keyswitch C0-A#0

C0

	Platinum only	Mod Wheel controls:
A#	> Martele, down bow	>
A	> Martele, up bow	>
G#	> Staccato, down bow	>
G	> Staccato, up bow	>
F#	> Short marcato	>
F	> Tremolo	>
E	> Legato ***mf***	>
D#	> Expressive legato	>
D	> Legato	>
C#	> Vibrato expressive, fast attack	>
C	> Vibrato sustain	>

18 First Violins
18V Keysw Sordino C0-D0

C0

		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Sordino legato	>
C#	> Sordino sustain	>
C	> Sordino expressive	>

9 Double Basses
CBS Keyswitch C3-D#3

C3

		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	> Legato	>
D	> Vibrato expressive, fast attack	>
C#	> Big sustain	>
C	> Vibrato sustain	>

Solo Strings

9 Double Basses
CBS Keyswitch C3-F#3

C3

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	> Legato	>
F	> Sforzando	>
E	> Vibrato expressive with 2 swells	>
D#	> Vibrato expressive, slow attack	>
D	> Forte-piano	>
C#	> Big sustain	>
C	> Vibrato sustain	>

Solo Violin
SVL Keyswitch C0-A0

C0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	> Vibrato sustain, crescendo on release	>
G#	> Vibrato sustain hard	>
G	> Non-vibrato hard	>
F#	> Non-vibrato soft	>
F	> Slur	>
E	> Vibrato expressive crescendo	>
D#	> Vibrato expressive 2	>
D	> Vibrato expressive 1	>
C#	> Vibrato sustain soft	>
C	> Legato	>

Solo Violin
SVL Keyswitch C0-D0

C0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Vibrato sustain hard	>
C#	> Vibrato sustain soft	>
C	> Legato	>

Solo Cello
SVC Keyswitch C0-A0

C0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	> Non-vibrato sustain, attack accent	>
G#	> Vibrato sustain, hard attack	>
G	> Non-vibrato	>
F#	> Slur	>
F	> Vibrato expressive	>
E	> Vibrato expressive, up bow	>
D#	> Vibrato expressive, down bow	>
D	> Double bow	>
C#	> Vibrato legato	>
C	> Vibrato sustain smooth	>

Solo Cello
SVC Keyswitch C0-E0

C0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	> Vibrato expressive	>
D#	> Vibrato expressive, up bow	>
D	> Vibrato double bow	>
C#	> Vibrato legato	>
C	> Vibrato sustain smooth	>

Woodwind Sections

3 Clarinets — 3CL Keyswitch C0-F0

Key	Articulation	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	> Legato	>
E	> Sustain	> Cross fade & attack accent
D#	> Sustain	> Cross fade
D	> Sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Sustain	>

3 Flutes — 3FL Keyswitch Trill C0-G0

Key	Articulation	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	> Vibrato legato	>
F#	> Whole-step trill	>
F	> Half-step trill	>
E	> Expressive diminuendo	>
D#	> Non-vibrato sustain	> Cross fade to vibrato sustain
D	> Sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Vibrato sustain	>

3 Flutes — 3FL Keyswitch C0-F0

Key	Articulation	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	> Vibrato legato	>
E	> Expressive diminuendo	>
D#	> Non-vibrato sustain	> Cross fade to vibrato sustain
D	> Sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Vibrato sustain	>

3 Oboes — 3OB Keyswitch Trill C0-F0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	> Legato	>
E	> Whole-step trill	>
D#	> Half-step trill	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Vibrato sustain	>

3 Oboes — 3OB Keyswitch C0-D0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Vibrato sustain	>

Solo Woodwinds

3 Oboes
3OB Keyswitch C0-F0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	> Legato	>
E	> Vibrato expressive	>
D#	> Non-vibrato sustain	> Cross fade to vibrato sustain
D	> Sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Vibrato sustain	>

Alto Flute
AFL Keyswitch C0-E0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	> Legato	>
D#	> Vibrato expressive	>
D	> Non-vibrato	>
C#	> Staccato	>
C (C0)	> Vibrato sustain	>

Bass Clarinet
BCL Keyswitch C0-F#0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	> Legato	>
F	> Expressive crescendo	> Attack accent
E	> Non-vibrato sustain	> Attack accent
D#	> Staccato	>
D	> Non-vibrato sustain ***f***	>
C#	> Non-vibrato sustain ***mf***	>
C (C0)	> Non-vibrato sustain ***p***	>

Bassoon
BSN Keyswitch C0-D0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Vibrato sustain	>

Bassoon
BSN Keyswitch C0-G0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	> Legato	>
F#	> Vibrato expressive long	>
F	> Vibrato expressive short	>
E	> Non-vibrato	>
D#	> Portato	>
D	> Vibrato sustain	>
C#	> Staccato	>
C (C0)	> Vibrato sustain	>

Clarinet
SCL Keyswitch C0-D0
C0

		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Non-vibrato sustain	> Attack accent
C#	> Staccato	>
C	> Non-vibrato sustain	>

Clarinet
SCL Keyswitch C0-F#0
C0

		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	> Legato	>
F	> Expressive, slow attack	>
E	> Expressive, fast attack	> Attack accent
D#	> Portato	>
D	> Non-vibrato sustain	> Attack accent
C#	> Staccato	>
C	> Non-vibrato sustain	>

Flute
SFL Keyswitch C0-D0
C0

		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C	> Vibrato sustain	>

Flute
SFL Keyswitch C0-F#0
C0

		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	> Legato	> Cross fade
F	> Vibrato expressive	>
E	> Vibrato expressive legato	>
D#	> Non-vibrato	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C	> Vibrato sustain	>

Contrabassoon
CTB Keyswitch C3-D3
C3

	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C	> Vibrato sustain	>

Contrabassoon
CTB Keyswitch C3-F#3

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	> Legato	>
F	> Vibrato expressive long	>
E	> Vibrato expressive short	>
D#	> Portato	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C3 / C	> Vibrato sustain	>

English Horn
EHN Keyswitch C0-D0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C0 / C	> Vibrato sustain	>

English Horn
EHN Keyswitch C0-F#0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	> Legato	>
F	> Legato slide	>
E	> Non-vibrato	>
D#	> Vibrato expressive	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C0 / C	> Vibrato sustain	>

Oboe
SOB Keyswitch C0-D0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C0 / C	> Vibrato sustain	>

Oboe
SOB Keyswitch C0-G0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	> Legato	>
F#	> Vibrato expressive	>
F	> Non-vibrato	>
E	> Legato slide	>
D#	> Sforzando	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C0 / C	> Vibrato sustain	>

Oboe
SOB Keyswitch Trill C0-F0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	> Legato	>
E	> Whole-step trill	>
D#	> Half-step trill	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C0 / C	> Vibrato sustain	>

Piccolo Flute
PFL Keyswitch C0-E0

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	> Legato	>
D#	> Vibrato expressive	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C0 / C	> Vibrato sustain	>

Piccolo Flute
PFL Keyswitch Trill C0-E0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	> Whole-step trill	>
D#	> Half-step trill	>
D	> Vibrato sustain	> Attack accent
C#	> Staccato	>
C0 / C	> Vibrato sustain	>

Brass Sections

4 Trombones
4TB Keyswitch A-1-B-1

Key		Mod Wheel controls:
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	>	>
C#	>	>
C0 / C	>	>
B	> Sustain	> Attack accent
A#	> Staccato	>
A-1 / A	> Sustain	>

4 Trombones
4TB Keyswitch A-1-D#0

Key		Mod Wheel controls:
G	>	>
F#	>	>
F	>	>
E	>	>
D#	> Portato & sustain	> Cross fade
D	> Forte-piano, crescendo on release	>
C#	> Forte-piano	>
C0 / C	> Sustain	> Cross fade & attack accent
B	> Sustain	> Attack accent
A#	> Staccato	>
A-1 / A	> Sustain	>

4 Trumpets
4TP Keyswitch C0-A0

Key		Mod Wheel controls:
A#	>	>
A	> Fast slur	>
G#	> Slow slur	>
G	> Crescendo	>
F#	> Forte-piano, crescendo on release	>
F	> Forte-piano	>
E	> Sforzando	>
D#	> Sustain	> Cross fade & attack accent
D	> Sustain	> Attack accent
C#	> Staccato	>
C0	> Sustain	>

4 Trumpets
4TP Keyswitch C0-D0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C0	> Vibrato sustain	>

6 French Horns
6FH Keyswitch Sus C0-D#0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	> Sustain, faster attack	> Cross fade
D	> Sustain	> Cross fade
C#	> Sustain, faster attack	>
C0	> Sustain	>

6 French Horns
6FH Keyswitch C0-A0

Key		Mod Wheel controls:
A#	>	>
A	> Long sforzando	>
G#	> Mellow sustain	>
G	> Forte-piano	> Cross fade to sustain
F#	> Fast slide to sustain	>
F	> Sustain	> Cross fade to portato
E	> Portato	>
D#	> Sustain & attack accent	> Cross fade
D	> Sustain	> Cross fade
C#	> Staccato	>
C0	> Sustain	>

6 French Horns
6FH Keyswitch C0-E0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	> Mellow sustain	>
D#	> Sustain	> Cross fade & attack accent
D	> Sustain	> Cross fade
C#	> Staccato	>
C0	> Sustain	>

6 French Horns
6FH Keyswitch C0-D#0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	> Sustain	> Cross fade to portato
D	> Portato	>
C#	> Sustain	> Cross fade
C (C0)	> Sustain smooth	>

6 French Horns
6FH Keyswitch FX C0-D#0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	> Shakes	>
D	> Rips long	>
C#	> Rips short, alternate	>
C (C0)	> Rips short	>

Solo Brass

French Horn
SFH Keyswitch C0-D0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Sustain	>

French Horn
SFH Keyswitch C0-E0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	> Portato	>
D#	> Sforzando	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Sustain	>

Trombone
STB Keyswitch C0-D0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C (C0)	> Sustain	>

Trumpet
STP Keyswitch C0-D0

C0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C	> Sustain	>

Trumpet
STP Keyswitch C0-G#0

C0

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	> Crescendo	>
G	> Slur	>
F#	> Fast slur	>
F	> Sforzando	>
E	> Vibrato sustain	>
D#	> Portato	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C	> Sustain	>

Tuba
STU Keyswitch C4-D#4

C4

Key	Platinum only	Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	> Sforzando	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C	> Sustain	>

Tuba
STU Keyswitch C4-D4

C4

Key		Mod Wheel controls:
A#	>	>
A	>	>
G#	>	>
G	>	>
F#	>	>
F	>	>
E	>	>
D#	>	>
D	> Sustain	> Attack accent
C#	> Staccato	>
C	> Sustain	>

Silver Keyswitches

In general there are two type of keyswitch files for Silver:

- Pedal Legato
- Master

The Master keyswitch files can vary a lot from one instrument to the next. The diagrams that follow show which keyswitch notes initiate which articulations within the file.

In contrast, Pedal Legato files work the same for all instruments. This Pedal Legato type of file is unique to Silver; neither Gold nor Platinum has articulation files that work quite the same way.

Pedal Legato Keyswitch Files

These files contain articulations that respond to the MIDI Sustain Pedal controller (CC64). With the pedal in the "off" position, a sustain is heard for each note. Moving the pedal to "on" cross-fades the sounds so that a more legato effect is heard.

There are also 3 keyswitches in these files to control the legato sounds:

- C0 Normal
- C#0 Faster attack
- D0 Faster with hard attack

When the pedal is "off," these keyswitches have no significant effect.

For those five instruments that have notes in the C0 to D0 range, the keyswitches are all an octave lower (C-1 to D-1). The instruments are *9 Double Basses*, *Bass Clarinet*, *Bassoon*, *Contrabassoon*, *Tuba*. Also, the French Horn instrument has 2 of these files, the second created with a ***fff*** layer that affects the cross-fades.

The abbreviated names of the Pedal Legato files also specify whether the articulations include vibrato. The following instruments indicate that the instruments are played *without* vibrato on sustained notes. All others are play *with* vibrato.

Non-vibrato:

Note that it is possible to map a knob or slider on a MIDI controller keyboard or a control surface to send Sustain Pedal (CC64) messages. And most sequencers can send Foot Pedal messages based on an envelope or manually entered MIDI events. That is, you don't have to buy an actual pedal to take advantage of this feature, but for controlling the legato while playing in real time, a pedal can work well.

Master Keyswitch Files

Master articulation files provide a variety of articulations in a single file that can be loaded into a single slot in the Kompakt sample player. Each instrument has a different array of keyswitches as seen in the following diagrams.

All of these articulations respond to MIDI "expression" messages (CC11) to control the volume of the samples in real time. This feature allows you to add expressiveness to your performance. See

Chapter 2 for more about expression control. The articulations in these files respond to no other MIDI control codes, such as the Mod Wheel or Foot Pedal.

Some of these files contain an articulation known as “Mock staccato.” This is an effect produced by altering the sustain samples with envelopes and filters. It sounds reasonably realistic, especially when reverberation is added to the mix.

Two of the instruments, *3 Flutes* and solo *Oboe*, contain a keyswitch on F0 with no articulation marked. If this F is pressed it causes the file to generate no sounds until a valid keyswitch is sent. The gap in keyswitches is intentional so that the location of trills on F# and G is consistent across all instruments that include trills.

You can load multiple copies of a keyswitch file into two or more slots in Kompakt if you want to hear, for example, a staccato bassoon and sustain bassoon playing simultaneously.

10 Cellos — VCS Master Keyswitch (C0)

Key	Articulation
A#	>
A	>
G#	>
G	> Whole-step trill
F#	> Half-step trill
F	> Tremolo
E	> Faster attack sustain
D#	> Staccato down
D	> Staccato up
C#	> Hard sustain
C	> Soft sustain

11 Second Violins — 11V Master Keyswitch (C0)

Key	Articulation
A#	>
A	>
G#	>
G	> Whole-step trill
F#	> Half-step trill
F	> Spiccato
E	> Expressive sustain
D#	> Staccato down
D	> Staccato up
C#	> Hard sustain
C	> Soft sustain

10 Violas — VAS Master Keyswitch (C0)

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Faster attack sustain
D#	> Staccato down
D	> Staccato up
C#	> Hard sustain
C	> Soft sustain

18 First Violins — 18V Master Keyswitch (C0)

Key	Articulation
A#	>
A	>
G#	>
G	> Expressive sordino
F#	> Sordino
F	> Tremolo
E	> Expressive sustain
D#	> Staccato down
D	> Staccato up
C#	> Hard sustain
C	> Soft sustain

9 Double Basses — CBS Master Keyswitch

C-1

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	> Forte piano
E	> Expressive sustain
D#	> Staccato down
D	> Staccato up
C#	> Hard sustain
C	> Soft sustain

Solo Violin — SVL Master Keyswitch

C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	> Non-vibrato
E	> Expressive sustain
D#	> Staccato down
D	> Staccato up
C#	> Hard sustain
C	> Soft sustain

Solo Cello — SVC Master Keyswitch

C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato down
D	> Staccato down
C#	> Hard sustain
C	> Soft sustain

3 Clarinets — 3CL Master Keyswitch

C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

3 FLutes — 3FL Master Keyswitch

C0

Key	Articulation
A#	>
A	>
G#	>
G	> Whole-step trill
F#	> Half-step trill
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

3 Oboes — 3OB Master Keyswitch

C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Mock staccato 2 (faster attack)
D	> Mock staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Alto Flute — AFL Master Keyswitch

C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Mock staccato 2 (faster attack)
D	> Mock staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Bass Clarinet — BCL Master Keyswitch

C-1

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Mock staccato 2 (faster attack)
D	> Mock staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Bassoon — BSN Master Keyswitch

C-1

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Clarinet — SCL Master Keyswitch

C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Flute
SFL Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Contrabassoon
CTB Master Keyswitch — C-1

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

English Horn
EHN Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Mock staccato 2 (faster attack)
D	> Mock staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Oboe
SOB Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	> Whole-step trill
F#	> Half-step trill
F	>
E	> Expressive sustain
D#	> Mock staccato 2 (faster attack)
D	> Mock staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Piccolo Flute
PFL Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Mock staccato 2 (faster attack)
D	> Mock staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

4 Trombones
4TB Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

4 Trumpets
4TP Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

6 French Horns
6FH Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

French Horn
SFH Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Trombone
STB Master Keyswitch — C0

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Trumpet — STP Master Keyswitch (C0)

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Mock staccato 2 (faster attack)
D	> Mock staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

Tuba — STU Master Keyswitch (C-1)

Key	Articulation
A#	>
A	>
G#	>
G	>
F#	>
F	>
E	> Expressive sustain
D#	> Staccato 2 (faster attack)
D	> Staccato 1 (slower attack)
C#	> Hard sustain
C	> Soft sustain

CHAPTER 7

Percussion Tables

Unlike the other three orchestral families, many percussion instruments make only a single sound, or a small repertoire of sounds. Sometimes, instead of creating a separate *instrument* for each of these johnny-one-notes, they are grouped together in a single file with different notes mapped to the different sound-makers. These collections are different from a "drum kit" often used in pop styles, because instead of a collection of dissimilar instruments played by a single musician in a live convert, these *instruments* in EWQLSO are usually related, for example, different types of bells.

In other cases, an instrument file contains multiple articulations of a single physical instrument. For example, a grouping might contain both hits and rolls for a bass drum.

The tables in this section list instrument names within the files, and indicate which range of notes play which instrument or articulation. Note that sometimes there are different timbres when there are different sizes or shapes of a single instrument group: for example there are several sizes of snare drums. No attempt is made to describe these differences here. You will have to audition the various sounds and decide which one, or ones, are best suited to your project. In some cases the differences are very subtle.

For most unpitched instruments, but not all, only the keyboard's white keys are used. Of course, for chromatic percussion instruments, like timpani, or the xylophone, all 12 notes in the octave are used.

Five pitched instruments also have hand-muffled versions:
- Crotales
- Glockenspiel
- Orchestral chines
- Timpani hits
- Vibraphone

Because the muffling is controlled by the Mod Wheel, it's possible to achieve the effect of muffling the sound while a note is already ringing.

12" Band Cymbal		
C3	Cymbal pair	hit, leave open, long ring
D3	Cymbal pair	hit, short ring, then close
E3	Cymbal pair	hit, close immediately

12" Cymbal		
C3	Suspended cymbal	roll, slow crescendo
D3	Suspended cymbal	roll, medium crescendo
E3	Suspended cymbal	roll, fast crescendo
F3	Suspended cymbal	hit, long ring

16" German Cymbal		
C3	Cymbal pair	hit, stay open
D3	Cymbal pair	hit, then close

18" Cymbal		
C3	Suspended cymbal	roll, slow crescendo
D3	Suspended cymbal	roll, medium crescendo
E3	Suspended cymbal	roll, fast crescendo
F3	Suspended cymbal	hit, long ring

18" German Cymbal		
C3	Cymbal pair	hit, stay open
D3	Cymbal pair	hit, then close

18" Viennese Cymbal		
C3	Cymbal pair	hit, stay open
D3	Cymbal pair	hit, then close

19" French Cymbal		
C3	Cymbal pair	hit, stay open
D3	Cymbal pair	hit, then close

20" Cymbal		
C3	Suspended cymbal	roll, slow crescendo
D3	Suspended cymbal	roll, medium crescendo
E3	Suspended cymbal	roll, fast crescendo
F3	Suspended cymbal	hit, long ring
G3	Suspended cymbal	brush ?
A3	Suspended cymbal	hit, long ring, and brush ?

20" French Cymbal		
C3	Cymbal pair	hit, stay open
D3	Cymbal pair	hit, then close

21" French Cymbal		
C3	Cymbal pair	hit, stay open
D3	Cymbal pair	hit, then close

22" Cymbal		
C3	Suspended cymbal	roll, fast crescendo
D3	Suspended cymbal	roll, medium crescendo
E3	Suspended cymbal	roll, slow crescendo
F3	Suspended cymbal	hit, long ring
G3	Suspended cymbal	brush ?
A3	Suspended cymbal	hit, long ring, and brush ?

Caution: In this instrument and the otherwise similar 20" Cymbal, the C3 and E3 are reversed.

23" Gong		
C1	Gong	roll, fast crescendo
D1	Gong	roll, very slow crescendo
E1	Gong	slow brush ?
F1	Gong	fast brush ?
G1	Gong	hit, long ring

28" Gong		
C2	Gong	roll, very slow crescendo
D2	Gong	roll, fast crescendo
E2	Gong	long brush ?
F2	Gong	short brush ?
G2	Gong	hit, long ring

48" Gong		
C3	Gong	roll, very slow crescendo
D3	Gong	hit, long ring

60" Gong		
C4	Gong	roll, very slow crescendo
D4	Gong	long brush ?
E4	Gong	short brush ?
F4	Gong	hard-mallet hit, medium length ring ?
G4	Gong	soft-mallet hit, long ring ?

5 Toms		
C1	Lowest tom	hit (left hand)
D1	Lowest tom	hit (right hand)
E1	2nd tom	hit (left hand)
F1	2nd tom	hit (right hand)
G1	Middle tom	hit (left hand)
A1	Middle tom	hit (right hand)
B1	4th tom	hit (left hand)
C2	4th tom	hit (right hand)
D2	Highest tom	hit (left hand)
E2	Highest tom	hit (right hand)

3 Snares		
C1	Small snare	hit (left hand)
D1	Small snare	hit (right hand)
E1	Small snare	rim shot
F1	Small snare	long roll, ***mf***
G1	Small snare	long roll, ***f***
A1	Small snare	short roll, fast crescendo
B1	Small snare	long roll, slow crescendo
C2	Medium snare	hit (left hand)
D2	Medium snare	hit (right hand)
E2	<empty>	
F2	Medium snare	long roll, ***mf***
G2	Medium snare	long roll, ***f***
A2	Medium snare	short roll, fast crescendo
B2	Medium snare	long roll, slow crescendo
C3	Large snare	hit (left hand)
D3	Large snare	hit (right hand)
E3	<empty>	
F3	Large snare	long roll, ***mf***
G3	Large snare	long roll, ***f***
A3	Large snare	short roll, fast crescendo
B3	Large snare	long roll, slow crescendo

3 Snares DXF Rolls		
C4	Small snare	long roll
D4	Medium snare	long roll
E4	Large snare	long roll
F4	Small snare	long roll, accent at release (last hit)
G4	Medium snare	long roll, accent at release (last hit)
A4	Large snare	long roll, accent at release (last hit)

These samples use the mod-wheel to control volume (Dynamic Cross Fade). You can make your own crescendo and diminuendo effects.

All cymbals

This is a collection of many, many cymbal sounds spread out over 5 octaves from C1 to B5. I will wait for an official list before attempting to interpret all the sounds just by ear.

Anvil

This is a collection of many, many anvil and railroad track sounds spread out over more than 3 octaves from C1 to E4. I will wait for an official list before attempting to interpret all the sounds just by ear.

Anvil Low

This is a collection of many, many anvil and railroad track sounds spread out over more than 3 octaves from C1 to E4. In general, they are lower in pitch than those in the collection directly above. I will wait for an official list before attempting to interpret all the sounds just by ear.

Bass Drum Concert

C3	Bass drum	roll, slow crescendo
D3	Bass drum	roll, medium length crescendo
E3	Bass drum	roll, fast crescendo
F3	Bass drum	long roll, slow crescendo
G3	Bass drum	roll, loud start, then soft, slow crescendo
A3	Bass drum	roll, loud start, then soft, med. length cresc.
B3	Bass drum	roll, loud start, then soft, fast cresc.
C4	Bass drum	hit (left hand) ?
D4	Bass drum	hit (right hand) ?
E4	Bass drum	hit, lower in pitch ?
F4	Bass drum	hit, louder ?
G4	Bass drum	long roll, looped

Bass Drum Wagner

C1	Bass drum	roll, slow crescendo
D1	Bass drum	roll, medium length crescendo
E1	Bass drum	roll, fast crescendo
F1	Bass drum	long roll, slow crescendo
G1	Bass drum	roll, loud start, then soft, slow crescendo
A1	Bass drum	roll, loud start, then soft, med. length cresc.
B1	Bass drum	roll, loud start, then soft, fast crescendo
C2	Bass drum	hit (left hand) ?
D2	Bass drum	hit (right hand) ?
E2	Bass drum	roll, ***p*** ?
F2	Bass drum	loud attack, then ***p*** ?
G2	Bass drum	long roll, looped

This drum is generally lower in pitch than the Bass Drum Concert instrument above.

Castanets		
C1	Castanets	short roll (1 sec) (left hand)
D1	Castanets	short roll (1 sec) (right hand)
E1	Castanets	long roll (3 sec)
F1	Castanets	single hit (left hand)
G1	Castanets	single hit (right hand)

Crotales		
C3-C5	Crotales	pitched chromatic scale

A hand-muffled version is also available. The muffling is controlled by the Mod Wheel.

Field Drum Ensemble		
C4	Field drum	single hit (left hand)
D4	Field drum	single hit (right hand)
F4	Field drum	long roll, ***mf*** ?
G4	Field drum	long roll, ***f*** ?

Field, Funeral & Tenor Drums		
C4	Field drum	single hit (left hand)
D4	Field drum	single hit (right hand)
F4	Field drum	roll ***mf***, accent at release (4 sec)
G4	Field drum	roll ***f***, looped
A4	Field drum	roll, fast crescendo (1 sec)
B4	Field drum	roll, slow crescendo (3 sec)
C5	Funeral drum	hit (left hand)
D5	Funeral drum	hit (right hand)
E5	Funeral drum	roll, looped, ***mf*** ?
F5	Funeral drum	roll, looped , ***f*** ?
G5	Tenor drum	hit (left hand) ?
A5	Tenor drum	hit (right hand) ?

Glockenspiel		
A3-C6	Glockenspiel	pitched chromatic scale

A hand-muffled version is also available. The muffling is controlled by the Mod Wheel.

Glockenspiel Mellow		
A3-C6	Glockenspiel	pitched chromatic scale

Gongs

This is a collection of many gong sounds (both hits and rolls) spread out over the following white keys on the keyboard: C1-G1, C2-G2, C3-D3, C4-G4. I will wait for an official list before attempting to interpret all the sounds just by ear.

Orchestral Chimes		
G2-G4	Orchestral chimes	pitched chromatic scale

A hand-muffled version is also available. The muffling is controlled by the Mod Wheel.

Snare Ensemble Large		
C3	Large snare drum	single hit (left hand)
D3	Large snare drum	single hit (right hand)
F3	Large snare drum	long roll, looped, ***mf***
G3	Large snare drum	long roll, looped, ***f***

Snare Ensemble Small		
C3	Small snare drum	single hit (left hand)
D3	Small snare drum	single hit (right hand)
F3	Small snare drum	long roll, looped, ***mf***
G3	Small snare drum	long roll, looped, ***f***

Tambourine		
E3	Tambourine	single hit (left hand)
F3	Tambourine	single hit (right hand)
F#3	Tambourine	slow shake (3 sec)
G3	Tambourine	fast shake (2 sec)
G#3	Tambourine	fast shake (3 sec)

Timpani Crescendo Long		
C1-A2	Timpani	crescendo roll, pitched chromatic scale

These are very slow crescendos, from silence, with a diminuendo at the end. The higher pitched samples tend to reach the maximum volume a little more quickly than the lowest pitched samples. If you need both hits and rolls, it is more efficient to use the combined samples below.

Timpani Crescendo Short		
C1-A2	Timpani	crescendo roll, pitched chromatic scale

These are crescendos, with a diminuendo at the end. They are about half the duration of Timpani Crescendo Long. As with the previous file, the higher pitched samples tend to reach the maximum volume a little more quickly than the lowest pitched samples. If you need both hits and rolls, it is more efficient to use the combined samples below.

Timpani Hits		
C1-A2	Timpani	single hit (left hand), pitched chromatic scale
C3-A4	Timpani	single hit (right hand), pitched chromatic scale

A hand-muffled version is also available. The muffling is controlled by the Mod Wheel. If you need both hits and rolls, it is more efficient to use the combined samples below.

Timpani Hits Crescendo Long		
C1-A2	Timpani	single hit (left hand), pitched chromatic scale
C3-A4	Timpani	single hit (right hand), pitched chromatic scale
C5-A6	Timpani	longer crescendo roll, pitched chromatic scale

This file includes all the samples from Timpani Hits, and adds in the samples from Timpani Crescendo Long, except that the crescendo rolls are positioned 4 octaves higher on the keyboard.

Timpani Hits Crescendo Short		
C1-A2	Timpani	single hit (left hand), pitched chromatic scale
C3-A4	Timpani	single hit (right hand), pitched chromatic scale
C5-A6	Timpani	shorter crescendo roll, pitched chromatic scale

This file includes all the samples from Timpani Hits, and adds in the samples from Timpani Crescendo Short, except that the crescendo rolls are positioned 4 octaves higher on the keyboard.

Timpani Rolls		
C1-A2	Timpani	roll, pitched chromatic scale, looped

These are rolls at a constant volume level, as determined by velocity.

Timpani Rolls DXF Mod Wheel		
C1-A2	Timpani	roll, pitched chromatic scale, looped

These are rolls with a dynamic cross fade, controlled by the Mod Wheel. Use this file to achieve greater control over the dynamics of the rolls.

Timpani Rolls Release Crescendo		
C1-A2	Timpani	roll, pitched chromatic scale, looped

These are rolls at a constant volume level, until the note (or key) is released. The release trail includes a crescendo roll that rises fairly fast and then goes silent (except for the reverberation).

Timpani Soft Hits		
C1-A2	Timpani	softer single hit (left hand), pitched chromatic scale
C3-A4	Timpani	softer single hit (right hand), pitched chromatic scale

These samples are softer single strokes than Timpani Hits.

Triangle		
B1	Triangle	single hit (left hand), lower pitch
C2	Triangle	single hit (left hand), higher pitch
C#2	Triangle	single hit (left hand), muffled
D2	Triangle	single hit, (right hand), muffled
D#2	Triangle	single hit (right hand), lower pitch
E2	Triangle	single hit (right hand), higher pitch

Various Metals		
C1	Bell tree	Fast upward glissando
D1	Bell tree	Medium speed upward glissando
E1	Bell tree	Slow upward glissando
F1	Bell tree	Upward glissando, playing last notes over and over
G1	Bell tree	Slow downward glissando
A1	Bell tree	Fast downward glissando
B1	Bell, lower pitch	Single hit
C2	Bell, lower pitch	Roll (tremolo) ?
D2	Bell, lower pitch	Roll (tremolo) ?
E2	Bell, lower pitch	Roll (tremolo) crescendo ?
F2	Bell, higher pitch	Single hit
G2	Bell, higher pitch	Roll (tremolo) ?
A2	Bell, higher pitch	Roll (tremolo) ?
B2	Bell, higher pitch	Roll (tremolo) crescendo ?

Various Percussion		
C1	Castanets	short roll (left hand) (1 sec)
C#1	Castanets	short roll right hand) (1 sec)
D1	Castanets	short roll ?
D#1	Castanets	short roll ?
E1	Castanets	longer roll (3 sec)
F1	Castanets	single click (left hand)
F#1	Castanets	single click (right hand)
G1	Wood block	single hit, lower pitch
G#1	Wood block	single hit, higher pitch
A1	?	

The *Various Perscussion* table continues on the next page.

Various Percussion (continued)		
A#1	Wood block ?	single hit, much higher pitch
B1	Wood block ?	single hit, even higher pitch
C2	?	
C#2	?	
D2	?	
D#2	?	
E2	Policeman's whistle	short tone (1.5 sec)
F2	?	
F#2	?	
G2	?	
G#2	?	
A2	?	
A#2	?	
B2	?	
C3	Slide whistle	long rising
C#3	Slide whistle	long falling
D3	Slide whistle	longer falling ?
D#3	Slide whistle	longer rising ?
E3	Slide whistle	roller coaster ride (down, up, down, up, etc.)
F3	Tambourine	single hit
F#3	Tambourine	slow shake (3 sec)
G3	Tambourine	fast shake (2 sec)
G#3	Tambourine	fast shake (3 sec)

Vibraphone		
F1-F4	Vibraphone	pitched chromatic scale

There are two separate hand-muffled versions of the Vibraphone.

Xylophone		
F2-F6	Xylophone	pitched chromatic scale

APPENDIX A

Using MIDI Control Codes

The published specification for MIDI defines control codes so that various aspects of a performance can be conveyed from one device to another. Here are some of the most commonly used codes.

MIDI Control Codes			
0	Bank Select	64	Hold Pedal (on/off)
1	Modulation Wheel	65	Portamento (on/off)
2	Breath controller	66	Sustenuto Pedal (on/off)
4	Foot Pedal	67	Soft Pedal (on/off)
5	Portamento Time	68	Legato Pedal (on/off)
6	Data Entry	69	Hold 2 Pedal (on/off)
7	Volume	120	All Sound Off
8	Balance	121	All Controllers Off
10	Pan position	123	All Notes Off
11	Expression	124	Omni Mode Off
12	Effect Control 1	125	Omni Mode On
13	Effect Control 2	126	Mono Operation
		127	Poly Operation

This information is included here only for the benefit of those very advanced users who might choose to use these MIDI codes to control a performance in ways beyond the scope of this Guide.

You might also notice codes CC1 (Modulation Wheel), CC7 (Volume), and CC11 (Expression) that are mentioned in the discussion of volume, velocity, and expression.

APPENDIX B

The Upcoming "Pro" Versions

This appendix lists all articulations that the upcoming "Professional" upgrades plans to add to version 2.5 of the EWQLSO libraries. These are preliminary lists as of December 2004 and may change before the software is released. Visit the EastWest Sounds website for more current information.

Platinum and Gold Professional

Strings

3 Cellos
- Sus Vib mp
- Sus Vib f heavy vib
- flautando nv

4 Violins
- Sus Vib mp
- Sus Vib f heavy vib
- flautando nv

10 Cellos
- Qlegato mp
- Qlegato F
- Marcato short FFF ugly x2
- Spiccato up Down
- Sordino mp med vib
- Sordino mf heavy vib
- Col Legno chromatic
- Sul Ponticello tremolo
- Bartok Pizz
- Oct up to sus vib

10 Violas
- Pizz P
- Pizz MF
- Pizz F
- Qlegato MP
- Qlegato MF
- Sul Ponticello near bridge tremolo
- Col Legno chromatic
- Sordino MP med vib
- Sordino MF heavy vib
- 1/2 step trill
- Whole step trill
- Tremolo F
- Spiccato up down
- Machine Gun x17 1 bar at 120 BPM
- Flautando legato
- Bartok Pizz
- oct up to sus vib

11 Violins
- Qlegato P
- Qlegato F
- Sordino MP med vib
- Sordino MF heavy vib
- Harmonics false
- Staccato Up Down P x2
- Marcato 2 sec heavy vib especially high up
- Sul ponticello (near bridge) tremolo
- Flautando legato
- Tremolo f
- Col Legno chromatic
- Pendereki bridge and normal stac and long
- Whole step trills VERY slow cluster FX
- Static Clusters 3 low, med, high
- Spiccato Up Down
- Machine Gun Rep x17 1 bar at 120 BPM
- Octave slide up fast to sus mf 2 sec bow
- Octave slide down fast to sus mf 2 sec
- 5th slide up to 4 sec sus heavy vib F
- 5th slide down to 4 sec sus heavy vib F
- Psycho FX 1- 2 1/2 steps up fast (3 notes)
- Psycho FX 4- minor third half step up fast
- Psycho FX 6- 3 1/2 steps down fast
- fast 1 sec nv 1 full bow F
- scratch fx

18 Violins

- Qlegato mp
- Qlegato f
- spiccato up down x 2
- octave up mf fast to 1 sec sus bow on string
- octave down mf fast to 1 sec sus
- Pendereki
- Bartok Pizz

Harp

- C D E F# G# Bb maj gliss up slow
- maj gliss up fast
- maj gliss down slow
- maj gliss down fast
- maj up down slow, fast
- 6 gliss up slow
- 6 gliss up fast
- 6 gliss down slow
- 6 gliss down fast
- 6 up down slow, fast
- dominant 9 up slow
- dominant 9 up fast
- dominant 9 down slow
- dominant 9 down fast
- dominant 9 up down slow, fast
- wholetone stuff C
- wholetone stuff C#
- Scary Effect in C

Solo Cello

- Sul Tasto 2 bows
- Qlegato F 3 bows
- Pizzicato MP
- Pizzicato MF
- Col Legno chromatic
- Octave Slides Up to sus 2 sec mp
- Pizzicato F
- Creaks

Solo Double Bass

- Sus Vib mp
- Sus Vib f
- Martele Short Up Down mp
- Martele Short Up Down f
- Martele short up down mf
- Col Legno chromatic
- Exp fast mf
- Spiccato Up Down F
- 1 sec full bow stroke nv
- Pizz mp
- Pizz mf
- Pizz F
- Exp long subtle mp
- Marcato FFF short

Solo Viola

- Sus Vib mp 2 bows
- Sus Vib f 2 bows
- Qlegato mp 3 bows
- Marcato FF short
- Martele short Up Down x4 MF
- Col Legno chromatic
- Pizz mp
- Pizz mf
- Pizz f
- Exp subtle soft long
- Exp medium cresc 2 bows
- Spiccato Up Down MP
- Sus NV MF with fast atk
- Exp fast cres romantic
- 1 sec full bow stroke up down nv
- 1/2 step trills
- Whole step trills
- Octave up to sus vib

Solo Violin

- Qlegato MP 3 bows
- Qlegato F 3 bows
- Pizzicato P
- Pizzicato MF
- Pizzicato F
- Spiccato Up Down
- Marcato short FF nv
- Subtle exp P leg light vib no swell
- Octave slide up to 2 sec sus mp bow on string
- Octave slide down to 2 sec sus mp
- 5th slide up to 2 sec heavy vib F
- Col legnochromatic
- 1/2 step trills
- whole step trills
- 120 bpm machine gun x17

Woodwinds

Bass Clarinet

- Sus NV mf to go in between last time
- Portato 3 second mp
- Qlegato mp
- Qlegato mf
- Keyclicks

English Horn 2, dark and beautiful

- Sus Vib mp smooth fast atk delay vib
- Portato nv mp
- Exp subtle mp atk
- Qlegato mp
- Qlegato mf
- Exp mf lyrical miroslav
- 1/2 step trills
- Whole step trills
- Staccato mp
- Staccato mf
- Staccato F
- grace notes

Concert Flute

- very short staccato mp
- very short staccato mf
- very short staccato f
- short staccato overblown
- 1/2 step trills
- Whole step trills
- Qlegato mp
- Qlegato f
- Psycho 2 1/2 steps down fast FF x2
- sus nv p
- Octave run up fast F
- Octave Run down fast F
- Octave run up and down fast F
- Sforzando Exp

Piccolo Flute

- NV p
- Qlegato mf vib
- Psycho 2 1/2 step down fast
- Rips up 5th FFF squeak fast x2
- Rips up 3rd FFF squeak fast x2
- octave up fast
- octave down fast
- octave up down fast
- Rips up 2 half steps

Solo Bassoon

- mp vibrato with atk
- Qlegato mf
- 1/2 step trills
- Whole step trills

Solo Clarinet

- Qlegato mp
- Qlegato mf
- Portato subtle 3 seconds mp
- 1/2 Step trills
- Whole step trills
- Exp very quick lyrical bump 2 sec sus
- Octave up fast
- Octave down fast
- Octave up down fast
- keyclicks
- Octave up fast slur
- grace notes

Solo Oboe

- Qlegato mp
- Qlegato f
- soft exp with slight swell
- key clacks

Brass

2 Bb Trumpets

- Mute Sus mp
- Mute Sus f
- Mute Staccato mp x 4
- Mute Staccato f x4
- Mute Rips
- Mute Cresc to flutter 3 sec
- VERY short staccato mp x6
- VERY short staccato mf x6
- VERY short staccato ff x6
- Machine Gun x17 1 bar at 120 BPM
- Sus mp
- Sus mf
- Sus fff
- Portato 3 sec mf subtle cresc decres
- Cresc to ff 1 sec
- Cresc to ff 2 sec
- Marcato mf
- Marcato f
- Qlegato mp
- Qlegato mf
- 1/2 step trills f
- Whole step trills f
- Octave Up to sus 3 sec
- Octave Down to sus 3 sec
- crazy fx

4 Bass Trombones

- Mute Sus mp
- Mute Sus f
- Mute staccato mp x2
- Mute staccato mf x2
- Mute cresc 2 sec to flutter
- Sus FFF
- Portato 3 sec subtle cres decres mp
- Portato 3 sec subtle cres decres f
- Bend downs 1/2 step Mummy
- stac fff x 3 very short
- Marcato 1 sec FF
- Marcato 1 sec MF
- Clusters mp

4 Tenor Trombones

- Mute Sus mp
- Mute Sus mf
- Mute staccato mp x3
- Mute staccato mf x3
- Mute cresc 2 sec to flutter
- Sus FFF
- Portato 3 sec subtle cres decres mp
- Portato 3 sec subtle cres decres f
- Marcato 1 sec FF
- Marcato 1 sec MF
- Bend downs 1/2 step Mummy
- **s**tac fff x 4 very short
- *Clusters mp long 3 1/2 step chromatic*

6 French Horns

- Marcato f 1 sec
- Stac short mp x2
- Stac short mf x2
- Stac short f x2
- Stac short ff x2
- Crescendo P-FF 1 sec
- Crescendo P-FF 2 sec
- Crescendo P-FF flutter 3 sec
- Portato NV 3 sec subtle cresc and decres mp
- Portato NV 3 sec subtle cresc and decres f
- 1/2 Step trills mf
- Whole Step lip trills ff
- Machine Gun sus x17 1 bar at 120 BPM
- Muted Sustain mf
- Qlegato mp
- Qlegato f typical med bright
- Octave up to 3 sec sus MF
- Octave down to 3 sec sus MF
- clusters like the shining some stay on pitch others go down whole tone
- cluster cresc like ewqlso 1
- 1/2 step bend downs like the village
- Matrix Hell
- Clusters

Piccolo trumpet
- Sus mp
- Sus f
- Stac mp x2
- Stac f x2
- 1/2 step trills
- Whole step trills
- Marcato mf

Solo Bass Trombone
- Sus fff
- Portato 3 sec mf
- Portato 3 sec f
- Marcato f 1 sec
- Stac mp
- Stac mf
- Stac ff

Solo Bb Trumpet 2
- Sus NV mp
- Sus NV mf
- Sus NV ff
- Stac short mp x8
- Stac short mf x8
- Stac short ff x8
- Crescendo NV P-FF 1 sec
- Crescendo NV P-FF 2 sec
- Crescendo NV P-FF flutter 3 sec
- Portato NV 2 sec subtle cresc and decresc mp
- Portato NV 2 sec decresc mf atk
- Portato NV 2 sec decresc f atk
- Sus SLOW VIB MP 2 sec delay decres vib fade
- Qlegato mp NV
- Qlegato mf NV
- Qlegato mp slow immediate vib
- Qlegato mf slow immediate vib
- Sus NV marcato 1 sec (long stac) MF
- Sus NV marcato 1 sec (long stac) FF
- Octave Up sus
- Octave Up gliss stac F
- 3 note fall chromatic

Solo Horn
- Staccato short p
- Staccato short mp
- Staccato short mf
- Qlegato mp
- Qlegato mf-f
- Staccato short FF

Solo Tenor Bone Sus fff
- Stac fff
- Portato 3 sec mf
- Marcato f 1 sec
- Qlegato MP
- Qlegato F
- Mute sus mp
- Mute sus f

Solo Tuba
- Sus FF
- Mute Sus F
- Marcato 1 sec MF
- Marcato 1 sec FF
- Portato 3 sec MF
- Stac FFFF short

Orchestral Percussion

Pitched

- Celeste 2 vel + rel
- Harpsichord
- Marimba 3 vel

Unpitched

- Sleigh bells 2 kinds
- Wood Blocks 8 different blocks multi vel
- 2 different Triangle open mute trem
- Larger Anvil
- puilli sticks 2 types
- Waterphone 50 variations
- Rub Rods
- Tambourine high pitch
- Steel Plates
- Taikos
- Slapsticks
- Mahler Hammer
- small guiro
- Wind machine
- Artillery Shells
- Washboard
- 5 ft gong fx
- 37" Tam Tam fx
- 26" Zildjian Ride complete
- 18" Zildjian Crash fx
- Large Roto Toms

Timpani

- Med hard mallet 16 vel left hand
- Med hard mallet rolls constant loopable F
- Soft mallet 4 vel from medium to FF

Note that Gold Professional includes all the articulations from the original Platinum that are missing from the original Gold, though only with the stage (F) mics, and only in 16-bit versions.

Silver Professional

Strings

3 Cellos

- Sus Vib mp
- Sus Vib f heavy vib
- flautando nv

4 Violins

- Sus Vib mp
- Sus Vib f heavy vib
- flautando nv

10 Cellos

- Qlegato mp
- Qlegato F
- Marcato short FFF ugly x2
- Spiccato up Down
- Sordino mp med vib
- Sordino mf heavy vib
- Bartok Pizz

10 Violas

- Pizz P
- Pizz MF
- Pizz F
- Qlegato MP
- Qlegato MF
- Sordino MP med vib
- Sordino MF heavy vib
- Tremolo F
- Spiccato up down
- Bartok Pizz

11 Violins
- Qlegato P
- Qlegato F
- Sordino MP med vib
- Sordino MF heavy vib
- Harmonics false
- Staccato Up Down P x2
- Pendereki bridge and normal stac and long
- Spiccato Up Down

18 Violins
- Qlegato mp
- Qlegato f
- spiccato up down x 2
- Bartok Pizz

Harp
- wholetone stuff C
- wholetone stuff C#

Solo Cello
- Sul Tasto 2 bows
- Qlegato F 3 bows
- Pizzicato MP
- Pizzicato MF
- Pizzicato F

Solo Contrabass
- Sus Vib mp
- Sus Vib f
- Martele Short Up Down mp
- Martele Short Up Down f
- Martele short up down mf
- Spiccato Up Down F
- Pizz mp
- Pizz mf
- Pizz F
- Exp long subtle mp
- Marcato FFF short

Solo Viola
- Sus Vib mp 2 bows
- Sus Vib f 2 bows
- Qlegato mp 3 bows
- Marcato FF short
- Martele short Up Down x4 MF
- Pizz mp
- Pizz mf
- Pizz f
- Exp subtle soft long
- Spiccato Up Down MP
- Sus NV MF with fast atk

Solo Violin

- Qlegato MP 3 bows
- Qlegato F 3 bows
- Pizzicato P
- Pizzicato MF
- Pizzicato F
- Spiccato Up Down
- Marcato short FF nv
- Subtle exp P leg light vib no swell
- Octave slide up to 2 sec sus mp bow on string
- Octave slide down to 2 sec sus mp

Woodwinds

Bass Clarinet
- Sus NV mf to go in between last time
- Qlegato mp
- Qlegato mf

English Horn 2, dark and beautiful
- Sus Vib mp smooth fast atk delay vib
- Exp subtle mp atk
- Qlegato mp
- Qlegato mf
- Exp mf lyrical miroslav
- Staccato mp
- Staccato mf
- Staccato F

Concert Flute
- very short staccato mp
- very short staccato mf
- very short staccato f
- short staccato overblown
- 1/2 step trills
- Whole step trills
- Qlegato mp
- Qlegato f
- sus nv p

Piccolo Flute
- NV p
- Qlegato mf vib
- Rips up 5th FFF squeak fast x2

Solo Bassoon
- mp vibrato with atk
- Qlegato mf

Solo Clarinet
- Qlegato mp
- Qlegato mf
- Portato subtle 3 seconds mp
- 1/2 Step trills
- Whole step trills

Solo Oboe
- Qlegato mp
- Qlegato f
- soft exp with slight swell

Brass

2 Bb Trumpets
- Mute Sus mp
- Mute Sus f
- Mute Staccato mp x 4
- Mute Staccato f x4
- VERY short staccato mp x6
- VERY short staccato mf x6
- VERY short staccato ff x6
- Sus mp
- Sus mf
- Sus fff
- Qlegato mp
- Qlegato mf

4 Bass Trombones

- Mute Sus mp
- Mute Sus f
- Mute staccato mp x2
- Mute staccato mf x2
- Sus FFF
- stac fff x 3 very short

4 Tenor Trombones
- Mute Sus mp
- Mute Sus mf
- Mute staccato mp x3
- Mute staccato mf x3
- Sus FFF
- stac fff x 4 very short

6 French Horns
- Marcato f 1 sec
- Stac short mp x2
- Stac short mf x2
- Stac short f x2
- Stac short ff x2
- Muted Sustain mf
- Qlegato mp
- Qlegato f typical med bright
- Clusters

Piccolo trumpet
- Sus mp
- Sus f
- Stac mp x2
- Stac f x2
- 1/2 step trills
- Whole step trills
- Marcato mf

Solo Bass Trombone
- Sus fff
- Portato 3 sec mf
- Portato 3 sec f
- Marcato f 1 sec
- Stac mp
- Stac mf
- Stac ff

Solo Bb Trumpet 2

- Sus NV mp
- Sus NV mf
- Sus NV ff
- Stac short mp x8
- Stac short mf x8
- Stac short ff x8
- Crescendo NV P-FF 2 sec
- Qlegato mp NV
- Qlegato mf NV
- Qlegato mp slow immediate vib
- Qlegato mf slow immediate vib

Solo Horn

- Staccato short p
- Staccato short mp
- Staccato short mf
- Qlegato mp
- Qlegato mf-f
- Staccato short FF

Solo Tenor Bone Sus fff

- Stac fff
- Portato 3 sec mf
- Marcato f 1 sec
- Qlegato MP
- Qlegato F

Solo Tuba

- Sus FF
- Portato 3 sec MF
- Stac FFFF short

Orchestral Percussion

Pitched

- Celeste 2 vel + rel
- Marimba 3 vel
- Harpsichord

Unpitched

- Sleigh bells
- Wood Blocks
- 2 different Triangle open mute trem
- Larger Anvil
- Tambourine high pitch
- small guiro
- Washboard
- 37" Tam Tam fx
- 26" Zildjian Ride